XL8000 User's Guide

12 U AdvancedTCA Chassis

Document Revision 1.1

kontron

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Safety Instructions

Contents

Before You Begin

Before handling the board, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the "Advisories" section in the Preface for advisory conventions used in this user's guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating the computer. Only qualified, experienced, authorized electronics service personnel should access the interior of the computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.

- Use extreme caution when installing or removing components. Refer to the installation instructions in this user's guide for precautions and procedures. If you have any questions, please contact Kontron Technical Support.

WARNING

High voltages are present inside the chassis when the unit's power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.

WARNING

This product may contain CLASS 1 LASER PRODUCT

Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Kontron strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

Take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.

- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.

- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Working with Batteries

Care and Handling Precautions for Lithium Batteries

Your computer board may have a non rechargeable lithium battery.

Do not short circuit

- Do not heat or incinerate
- Do not charge
- Do not deform or disassemble
- Do not apply solder directly
- Do not mix different types or partially used batteries together
- Always observe proper polarities

Replacing Lithium Batteries

Exercise caution while replacing lithium batteries!

WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries, following manufacturer's instructions.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabriquant.

ACHTUNG

Explosionsgefahr bei falschem Batteriewechsel. Verwenden Sie nur die empfohlenen Batterietypen des Herstellers. Entsorgen Sie die verbrauchten Batterien laut Gebrauchsanweisung des Herstellers.

ATENCION

Puede explotar si la pila no este bien reemplazada. Solo reemplazca la pila con tipas equivalentes segun las instrucciones del manifacturo. Vote las pilas usads segun las instrucciones del manifacturo.

Preface

Contents

How to Use This Guide

This user's guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

You can find the latest release of this User's Guide at:
http://www.kontron.com or at: ftp://ftp.kontron.ca/support/

For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

The following is a summary of chapter contents:

- Chapter 1, Product Description
- Chapter 2, System Features
- Chapter 3, Appendix

Customer Comments

If you have any difficulties using this user's guide, discover an error, or just want to provide some feedback, please send a message to: Tech.Writer@ca.kontron.com. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user's guide on our Web site. Thank you.

Advisory Conventions

Seven types of advisories are used throughout the user guides to provide helpful information or to alert you to the potential for hardware damage or personal injury. They are Note, Signal Paths, Related Jumpers, BIOS Settings, Software Usage, Cautions, and Warnings. The following is an example of each type of advisory. Use caution when servicing electrical components.

Note :
Indicate information that is important for you to know

Signal Paths:
Indicate the places where you can fin the signal on the board

Related Jumpers:
Indicate the jumpers that are related to this sections

BIOS Settings :
Indicate where you can set this option in the BIOS

Software Usage :
Indicates how you can access this feature through software.

CAUTION

Indicate potential damage to hardware and tells you how to avoid the problem.

WARNING

Indicates potential for bodily harm and tells you how to avoid the problem.

Disclaimer: We have tried to identify all situations that may pose a warning or a caution condition in this user's guide. However, Kontron does not claim to have covered all situations that might require the use of a Caution or a Warning.

Unpacking

Follow these recommendations while unpacking:

- Remove all items from the box. If any items listed on the purchase order are missing, notify Kontron customer service immediately.
- Inspect the product for damage. If there is damage, notify Kontron customer service immediately.
- Save the box and packing material for possible future shipment.

Powering Up the System

Before any installation or setup, ensure that the chasis is unplugged from power sources or subsystems.
If you encounter a problem, verify the following items:

- Make sure that all connectors are properly connected.

If you are still not able to get your system running, contact our Technical Support for assistance.

Adapter Cables

Because adapter cables come from various manufacturers, pinouts can differ. The direct crimp design offered by Kontron allows the simplest cable assembly. All cables are available from Kontron Sales Department.

Storing Boards

Electronic boards are sensitive devices. Do not handle or store device near strong electrostatic, electromagnetic, magnetic or radioactive fields.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

FCC Compliance Statement for Class A Devices

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

This is a Class A product. If not installed in a properly shielded enclosure and used in accordance with this User's Guide, this product may cause radio interference in which case users may need to take additional measures at their own expense.

Limited Warranty

Kontron Canada, Inc, ("The seller") warrants its boards to be free from defects in material and workmanship for a period of two (2) years commencing on the date of shipment. The liability of the seller shall be limited to replacing or repairing, at the seller's option, any defective units. Equipment or parts, which have been subject to abuse, misuse, accident, alteration, neglect, or unauthorized repair are not covered by this warranty. This warranty is in lieu of all other warranties expressed or implied.

1. Product Description

Contents

1.1 Product Overview

This document is the User's Manual for the XL800012U 14 Slot AdvancedTCA Shelf. It provides technical information on the 14 Slot AdvancedTCA Shelf, which accepts 2 ATCA Base Interface Hub boards, 12 ATCA Node boards, two Dedicated Shelf Managers, and a Shelf Alarm Panel.

The intended audience of this document is system integrators and hardware/software engineers who are using the XL8000 12U 14 Slot ATCA Shelf.

1.2 What's Included

This board is shipped with the following items:

1. One CD-ROM.
2. One XL8000 chassis.
3. Boards that have been ordered
4. Cables that have been ordered

If any item is missing or damaged, contact the supplier.

2. System Features

Contents

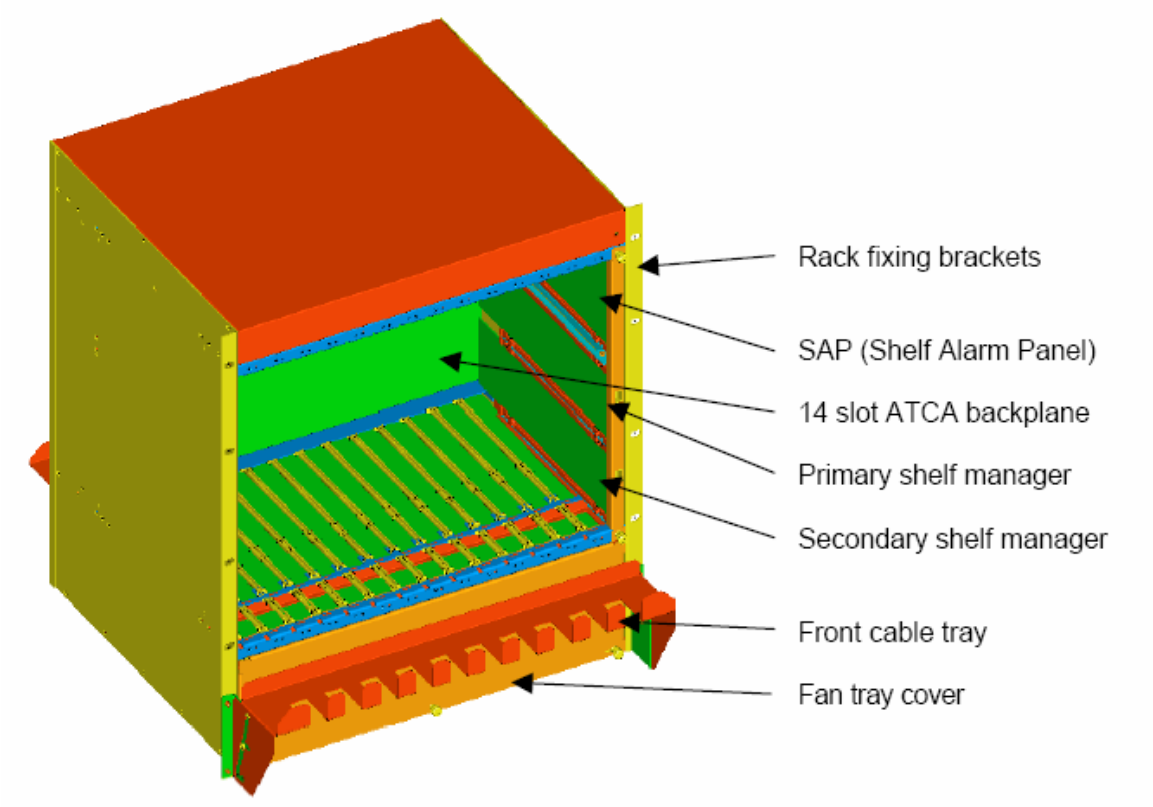
2.1 Hardware Platform

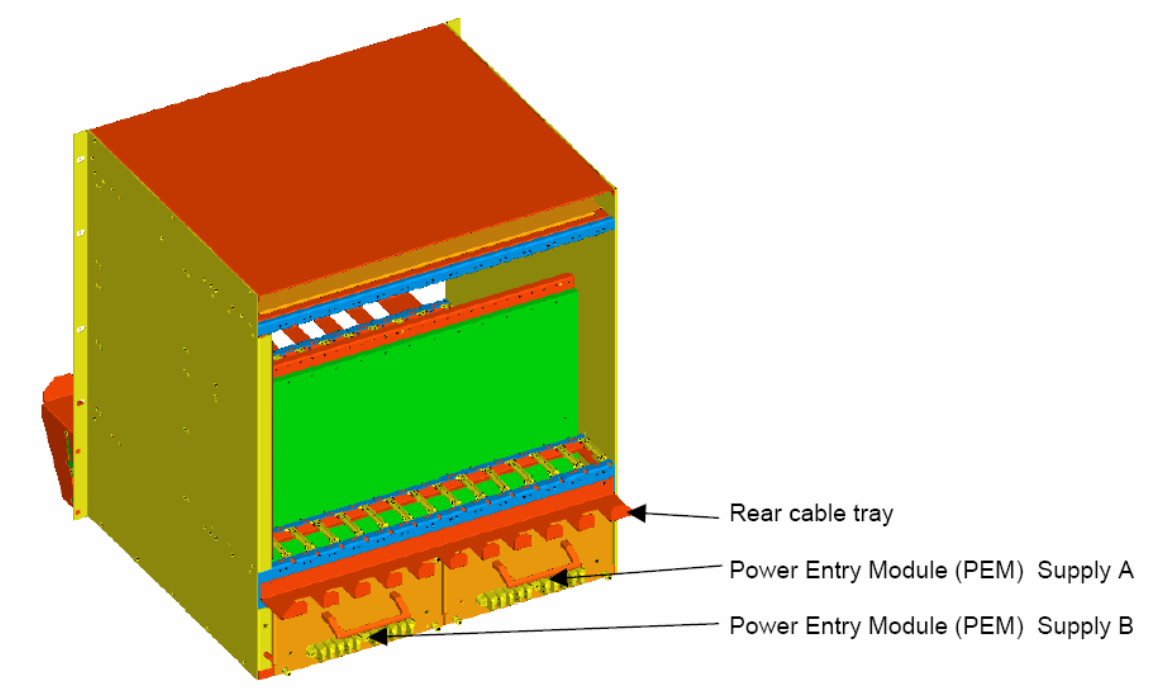
This section defines the hardware platform of the 12U 14 slot AdvancedTCA Shelf.

2.1.1 Overview

The 14 slot AdvancedTCA Shelf implements the following features:

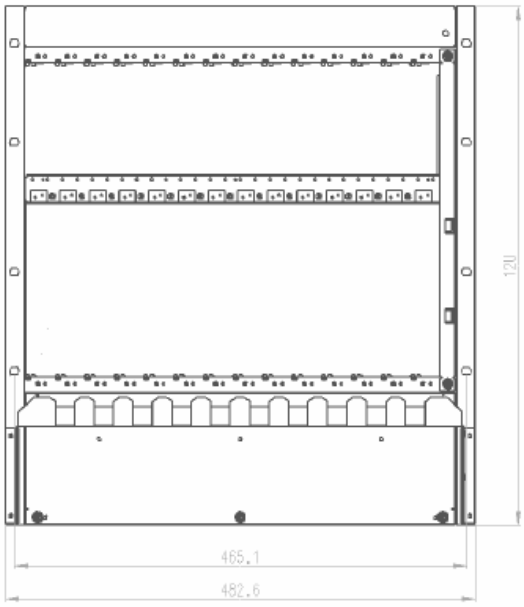
- 12U high x 15" x 17" form-factor Shelf
- Mounting brackets for 19" cabinets
- 14 slot ATCA backplane with Full Mesh or Dual Star Center Fabric Interface, Dual Star Base Interface, and bused or radial IPMB Interface
- 2 dedicated Shelf Manager slots that accept Schroff **ShMM-ACB-III** Shelf Managers
- Cooling for 200W per Front Board and 15W per Rear Transition Module
- 3 Hot Swap fan trays, front pluggable
- Air filter for filtering the inlet air
- Shelf Alarm Panel (SAP): Alarm / signal interface and serial interface for shelf manager



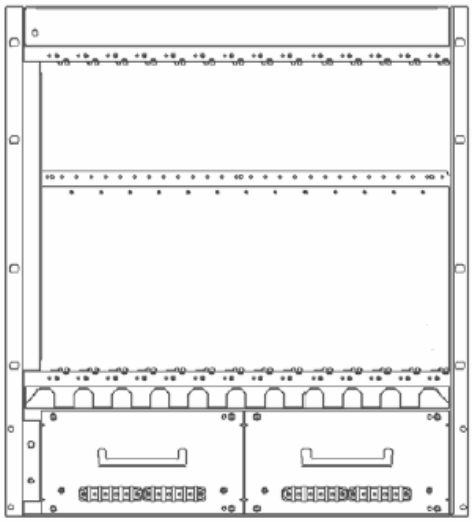


2.1.2 Shelf Mechanical Dimensions

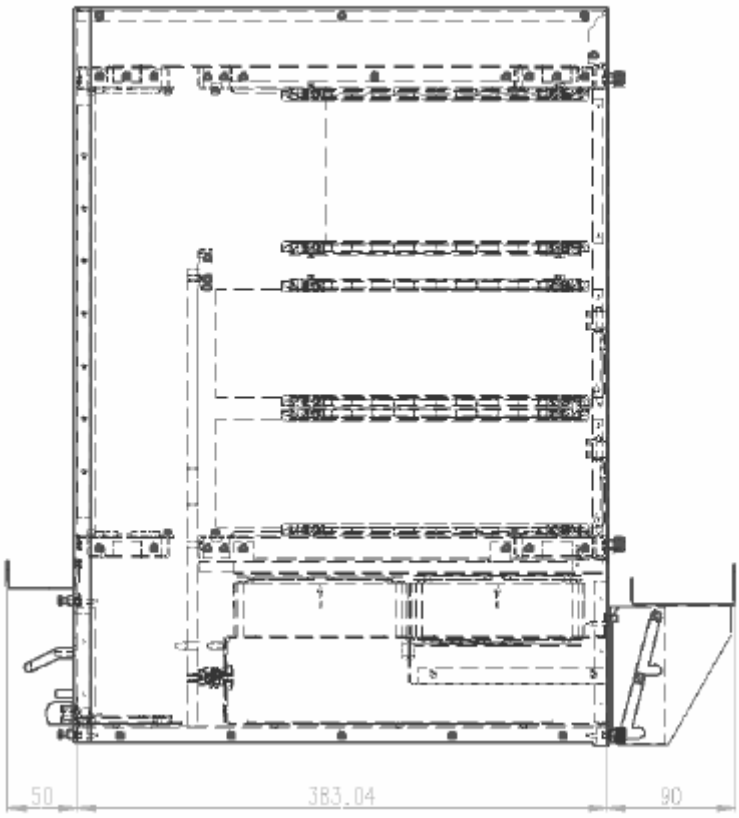
Front view:



Rear View:



Side view:



2.2 Backplane Description

The Schroff 14 slot AdvancedTCA Shelf incorporates a 14 slot ATCA monolithic backplane with two dedicated Shelf Manager slots, one Shelf Alarm Panel (SAP) slot, three fan tray slots and two Power Entry Module (PEM) slots.

2.2.1 Logical to Physical Slot Mapping

The physical slots are sequentially numbered from left to right. The logical slots are numbered from 1 through 14. See the figure below for the physical to logical slot mapping.

Physical slot	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Logical slot	13	11	9	7	5	3	1	2	4	6	8	10	12	14
HW-Address (hex)	4D	4B	49	47	45	43	41	42	44	46	48	4A	4C	4E
IPMB-Address (hex)	9A	96	92	8E	8A	86	82	84	88	8C	90	94	98	9C

2.2.2 Base Interface

Logical Slots 1 & 2 are the Hub Slots for the Dual Star Base Interface. Base Interface Channel 1 (ShMC) of Logical Slot 1 is routed to the upper dedicated Shelf Manager slot on the ATCA Backplane. Base Interface Channel 1 (ShMC) of Logical Slot 2 is routed to the lower dedicated Shelf Manager

slot on the ATCA Backplane. See section 6.5.5 of the PICMG® 3.0 Revision 1.0 AdvancedTCA® Base Specification for details.

2.2.3 Fabric Interface

The Fabric Interface in the backplane is wired as a Dual Star or Full Mesh with a Full Channel interconnecting each AdvancedTCA® slot. The hub slots are located at logical slots 1 and 2. See section 6.6.3.1 of the PICMG® 3.0 Revision 1.0 AdvancedTCA® Base Specification for details.

Note :
Single Star, Dual Star, and Dual-Dual Star configurations are a subset of a Full Mesh configuration. A Full Mesh shelf can be used as a Single Star or a Dual Star system by installing combination Fabric and Base Interface Hub boards in Logical Slots 1 and or 2. For a Dual-Dual Star configuration, logical slots 3 and or 4 are used as additional Fabric and Base Interface hub slots.

2.2.4 Synchronization Clocks

Synchronization clocks are bused between all 14 AdvancedTCA slots. See section 6.7 of the PICMG® 3.0 Revision 1.0 AdvancedTCA® Base Specification for details.

2.2.5 Update Channel Interface

The Update Channels are wired between adjacent backplane slots. See the figure below for the Update Channel pairs. ATCA boards installed in Logical Slots 1&2 or 3&4 will be interconnected with their Update Channel. These will usually be hub boards and the Update Channel can be used to pass data or routing information between hubs. The Update Channel routing for the other slots is configured to support connections between single slot ATCA boards. See section 6.8 of the PICMG® 3.0 Revision 1.0 AdvancedTCA® Base Specification for details.

	Node	Node	Node	Node	Node	Node	Hub Slot	Hub Slot	Node	Node	Node	Node	Node	Node
Physical Slot	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Logical Slot	13	11	9	7	5	3	1	2	4	6	8	10	12	14
Update Channel														

2.2.6 Bused IPMB Interface

The IPMB interfaces at each slot are wired as redundant buses. The IPMB interfaces are also bused to both dedicated Shelf Manager slots on the ATCA Backplane.

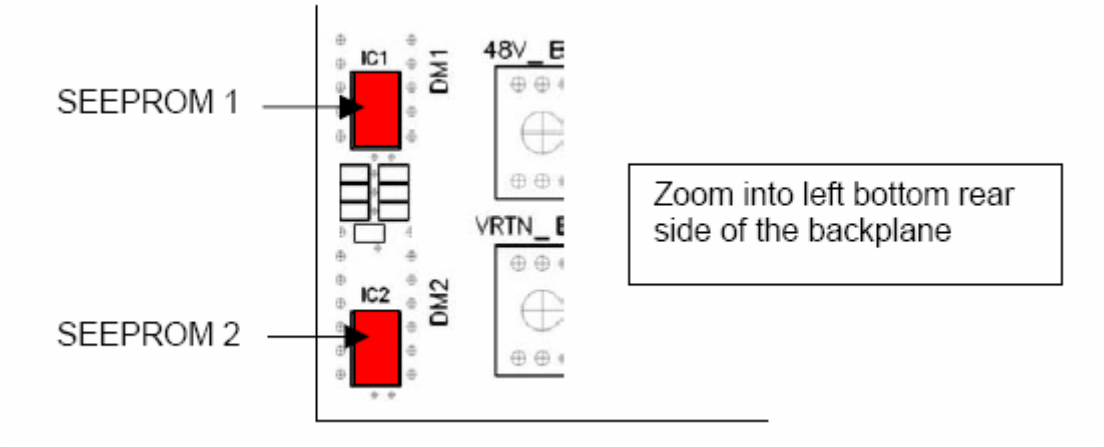
2.2.7 Dedicated Shelf Manager Slots

The two slots at the far right side of the shelf are designed to accept Schroff **ShMM-ACB-III** Shelf Management Controllers. The Dedicated Shelf Manager slots are wired to both IPMB buses, Base Interface Channel 1 (ShMC) of the Base Interface Hub slots, and to the Fan Tray connectors FAN1, FAN2 and FAN3. The Dedicated Shelf Manager Slots also have interconnected signals that allow the **ShMM-ACB-III**s to run in a redundant configuration. See Schroff Shelf Management Mezzanine (**ShMM**) ATCA Carrier Board-III Technical Specification for more details.

2.2.8 Shelf FRU SEEPROMs

WARNING

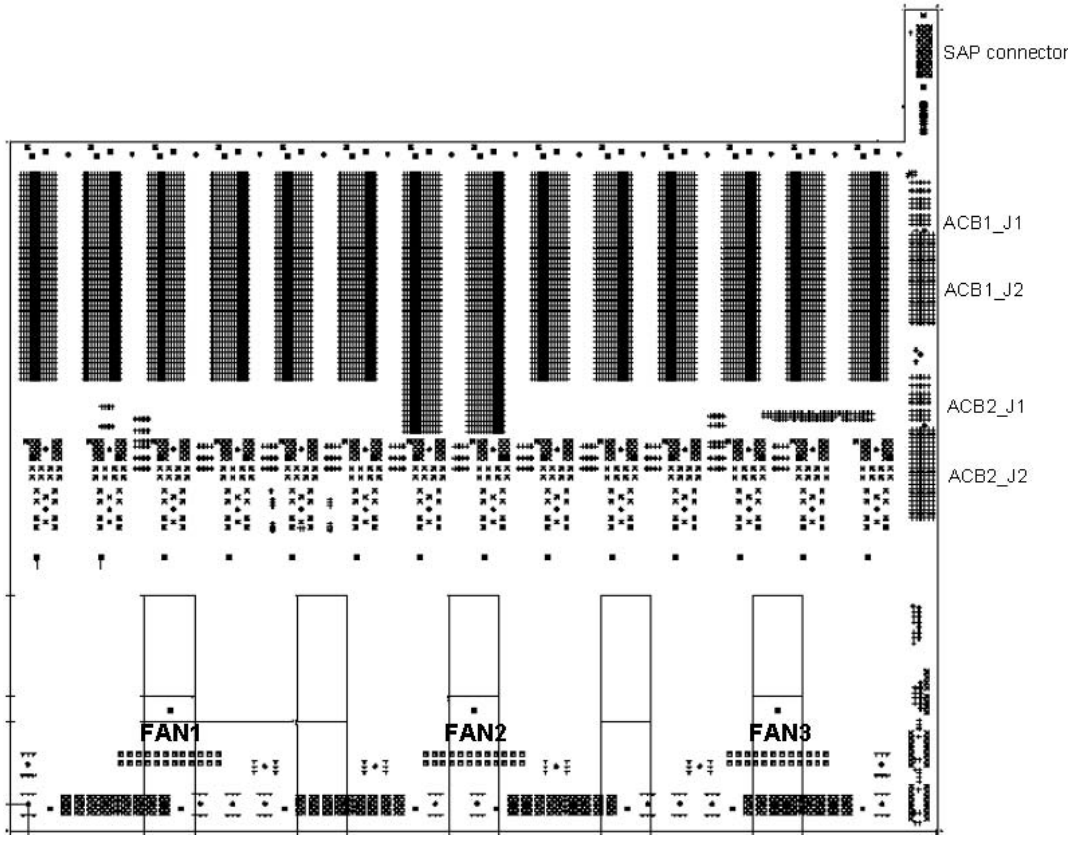
The ATCA-Backplane incorporates two 24LC256 SEEPROMs that are used by the Dedicated Shelf Managers to store Shelf FRU data. Both SEEPROMs are at I^2C address 0xa4 but on different I^2C buses. I^2C bus Channel1 of both Shelf Managers is connected to SEEPROM1 (DM1) on the backplane, I^2C bus Channel2 is connected to SEEPROM2 (DM2) on the backplane. Only the active shelf manager has access to the SEEPROMs on the backplane.



2.2.9 ATCA Backplane Expansion Connectors

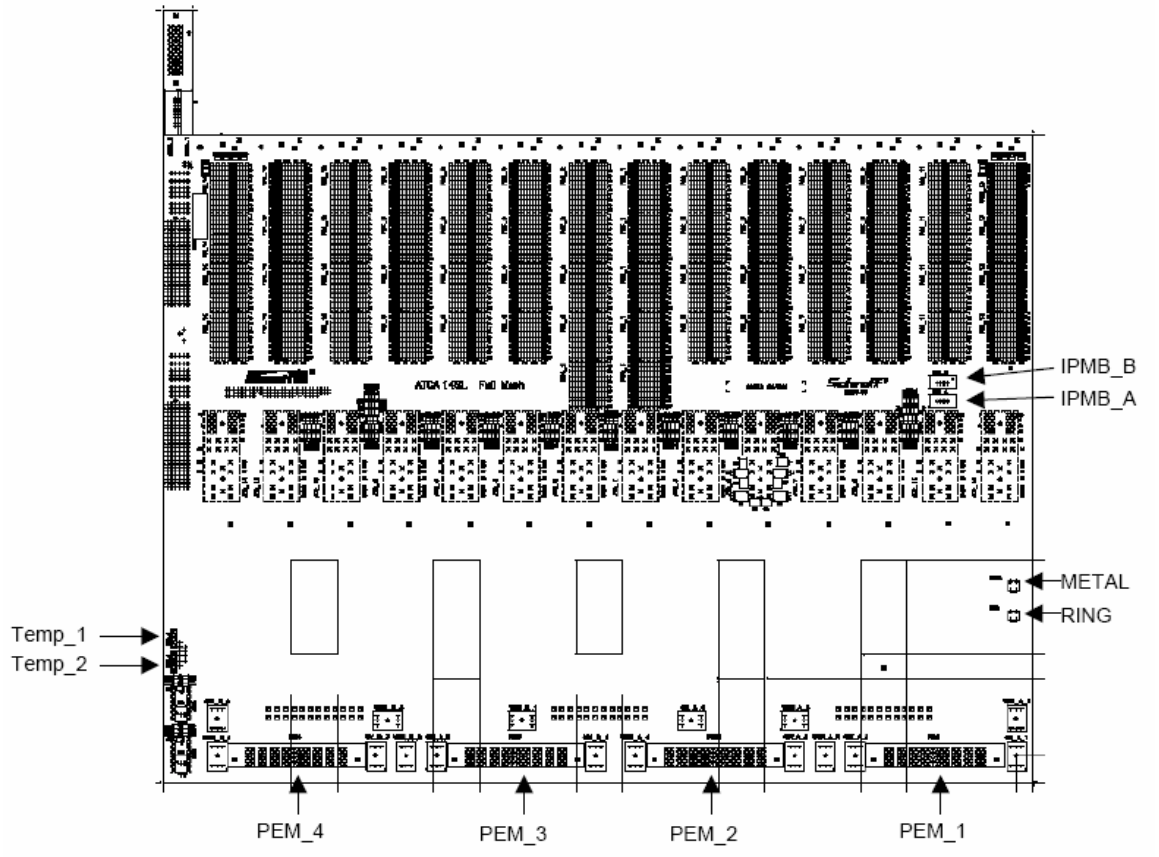
This section provides the definitions of all expansion connectors on the Control backplane.

Front view on backplane



Connector name	Connector type	
SAP	30pin DIN C/3	Pinout and pin description see chapter “SAP“
ACB1_J1	Metric C11	Pinout and pin description see chapter “Shelf Managers“
ACB1_J2	Metric AB22	Pinout and pin description see chapter “Shelf Managers“
ACB2_J1	Metric C11	Pinout and pin description see chapter “Shelf Managers“
ACB2_J2	Metric AB22	Pinout and pin description see chapter “Shelf Managers“
FAN1	Mini-Fit 24-pin P/N 15-24-7241	Pinout and pin description see chapter “Fan Trays“
FAN2	Mini-Fit 24-pin P/N 15-24-7241	Pinout and pin description see chapter “Fan Trays“
FAN3	Mini-Fit 24-pin P/N 15-24-7241	Pinout and pin description see chapter “Fan Trays“

Rear view of backplane



2.2.9.1 TEMP_1 Connector

Connector TEMP_1 is a 1-row 4 pin 2.54mm pitch header. The Shelf exhaust temperature sensors are connected to either of these connectors.

Pin	Signal name	Description
1	I2C_PWR	3.3VDC power supply for Shelf I2C-bus devices
2	PS_SDA0	Master-Only I2C-bus channel 4, Serial Data
3	PS_SCL0	Master-Only I2C-bus channel 4, Serial Clock
4	GND	Logic Ground

2.2.9.2 TEMP_2 Connector

Connector TEMP_2 is a 1-row 4 pin 2.54mm pitch header. Additional temperature sensors can be connected to these connectors.

Pin	Signal name	Description
1	I2C_PWR	3.3VDC power supply for Shelf I2C-bus devices
2	FT_SDA	Master-Only I2C-bus channel 3, Serial Data
3	FT_SCL	Master-Only I2C-bus channel 3, Serial Clock
4	GND	Logic Ground

2.2.9.3 RING, Ringing Generator Connector

There are two redundant Ringing Generator buses in the backplane wired to the Zone 1 connector. These buses can be used to distribute ringing voltage to line cards in the ATCA Shelf. See section 2.4.1.3 of the PICMG® 3.0 Revision 1.0 AdvancedTCA® Base Specification for details.

Pin	Signal name
1	RING A
2	RRTN A
3	RING B
4	RRTN B

2.2.9.4 METAL, Metallic Test Connector

There are two metallic test buses in the backplane wired to the Zone 1 connector. These test buses can be used to connect line cards in the ATCA Shelf to internal or external test equipment. See section 2.4.1.3 of the PICMG® 3.0 Revision 1.0 AdvancedTCA® Base Specification for details.

Pin	Signal name
1	MT2 TIP
2	MT2 RING
3	MT1 RING
4	MT1 TIP

2.2.9.5 IPMB_A Connector Connector IPMB_A is wired to the IPMB_A bus.

Pin	Signal name	Description
1	SCL_A15	Bused IPMB A , Serial Clock
2	GND	Logic Ground
3	SDA_A15	Bused IPMB A, Serial Data
4	I2C_PWR	3.3VDC power supply for Shelf I2C-bus devices
5	-	

2.2.9.6 IPMB_B Connector Connector IPMB_B is wired to the IPMB_B bus.

Pin	Signal name	Description
1	SCL B15	Bused IPMB B , Serial Clock
2	GND	Logic Ground
3	SDA B15	Bused IPMB B, Serial Data
4	I2C PWR	3.3VDC power supply for Shelf I2C-bus devices
5	-	

2.2.9.7 PEM1 Connector

B3	B2	B1	6	5	4	3	2	1	A1	A2	A3
D	VRTN_A_2	-48V_A_2	ENABLE _PEM1	ENABLE _PEM1		PEM_P1	PEM_P1_1	INT#	VRTN_A_1	-48V_A_1	
C	VRTN_A_2	-48V_A_2	res	res		GND	GND		VRTN_A_1	-48V_A_1	
B	VRTN_A_2	-48V_A_2	res	res		GND	PS_SCL0		VRTN_A_1	-48V_A_1	
A	VRTN_A_2	-48V_A_2	res	res		I2C_PWR	PS_SDA0		VRTN_A_1	-48V_A_1	

2.2.9.8 PEM2 Connector

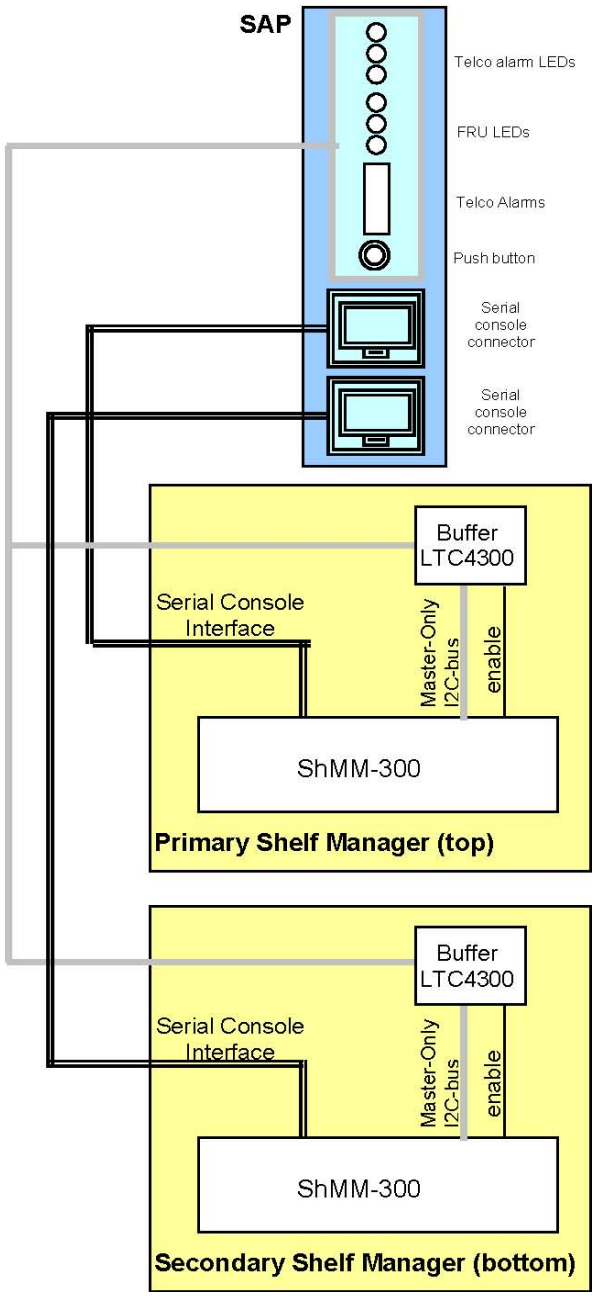
B3	B2	B1	6	5	4	3	2	1	A1	A2	A3
D	VRTN_A_4	-48V_A_4	ENABLE _PEM1	ENABLE _PEM1		PEM_P1	PEM_P1_1	INT#	VRTN_A_3	-48V_A_3	
C	VRTN_A_4	-48V_A_4	res	res		GND	GND		VRTN_A_3	-48V_A_3	
B	VRTN_A_4	-48V_A_4	res	res		GND	PS_SCL0		VRTN_A_3	-48V_A_3	
A	VRTN_A_4	-48V_A_4	res	res		I2C_PWR	PS_SDA0		VRTN_A_3	-48V_A_3	

2.2.9.9 PEM3 Connector

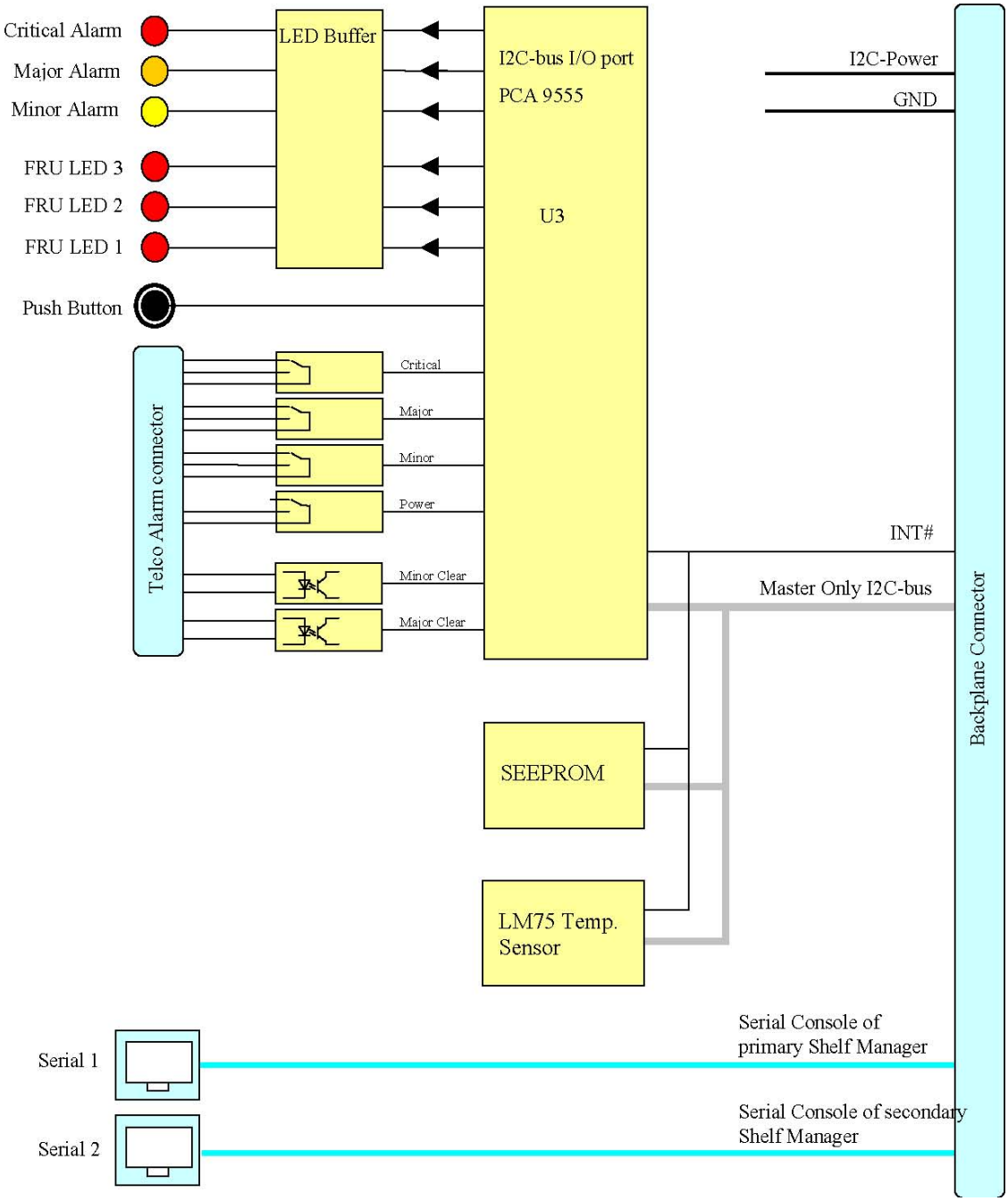
B3	B2	B1	6	5	4	3	2	1	A1	A2	A3
D	VRTN_B_2	-48V_B_2	ENABLE _PEM1	ENABLE _PEM1		PEM_P1	PEM_P1_1	INT#	VRTN_B_1	-48V_B_1	
C	VRTN_B_2	-48V_B_2	res	res		GND	GND		VRTN_B_1	-48V_B_1	
B	VRTN_B_2	-48V_B_2	res	res		GND	PS_SCL0		VRTN_B_1	-48V_B_1	
A	VRTN_B_2	-48V_B_2	res	res		I2C_PWR	PS_SDA0		VRTN_B_1	-48V_B_1	

2.3 Shelf Alarm Panel (SAP)

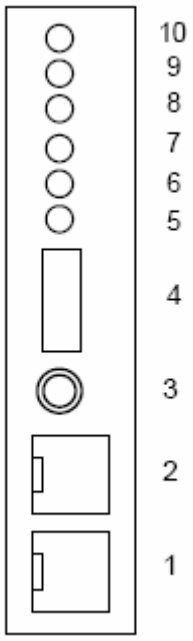
The Shelf Alarm panel is mounted vertically at the top right side of the Shelf. It provides the connectors for the serial console interfaces of the Shelf Managers, the telco alarm connector, the telco alarm LEDs, the FRU LEDs and the telco alarm reset push button. The I^2C-bus devices on the SAP are connected to the Master-Only I^2C-bus of both ACB-IIIs. The Master-only I^2C-bus is buffered on the ACB-III by a LTC4300 device whose enable input is connected to the inverted /Active signal of the ShMM-300 so that only the active shelf manager has access to the SAP.



2.3.1 SAP Block diagram



2.3.2 SAP Front panel components



Pos	Name	Function
1	CN5	Serial console connector for secondary (bottom) shelf manager
2	CN6	Serial console connector for primary (top) shelf manager
3	Push button	Telco alarm cutoff push button
4	CN2	Telco alarm connector
5	D9	FRU LED1 (red)
6	D10	FRU LED2 (red)
7	D11	FRU LED3 (red)
8	D8	Telco alarm LED minor (red)
9	D7	Telco alarm LED major (red)
10	D6	Telco alarm LED critical (red)

2.3.3 SAP Serial Interfaces

The SAP provides the RS-232 serial console interface connector on the front panel for both, the primary and the secondary shelf manager, using an 8-pin modular receptacle (DTE). A full set of RS-232 signals, including modem control, is provided. The signals are routed from CNx to the SAP-backplane and then to the first serial port of the ShMM-300 of the primary shelf manager (upper slot) and routed from CNx to the SAP-backplane and then to the first serial port of the ShMM-300 to the secondary shelf manager (bottom slot). The serial interface is implemented on the ShMM-300 using the built-in UART/modem port of the C5471.

Note :
The serial console is normally configured for 9600 baud, no parity, 8 data bits, and one stop bit.

See section “SAP” for the details of the serial console cable construction.

2.3.4 SAP Telco Alarms

2.3.4.1 Telco Alarm Interface

The **SAP** provides a Telco Alarm interface on the front panel Molex micro-DB15 connector (CN2), part number 83612-9020. The Telco Alarm interface relay circuits are capable of carrying 60VDC or 30VAC at 1A.The **SAP** accepts timed pulse inputs for clearing Minor and Major alarm states (there is no reset for the Critical state). Reset is accomplished by asserting a voltage differential from 3.3V to 48V for between 200 and 300ms. The acceptance voltage range is from 0 to 48VDC continuous (handles up to 60VDC at a 50% duty cycle). The current drawn by a reset input does not exceed 12mA.

2.3.4.2 Telco Alarm LEDs

The **SAP** provides the Telco Alarm LEDs using the LEDs D6, D7, and D8. These LEDs are used to indicate presence of Critical, Major, and Minor alarms. The LEDs function as follows:

State	Description
Off	No alarm triggered
On	Alarm triggered
Blinking	Alarm Cutoff (ACO) is activated

2.3.4.3 Telco Alarm Cutoff Push Button

The **SAP** provides a Telco Alarm Cutoff function with the Front Panel push button switch. This push button activates the Alarm Cutoff (ACO) state. When ACO is activated, the active Alarm LEDs blinks and all of the alarm relays are deactivated. This button does not clear alarms.

2.3.4.4 CN2 Telco Alarm Connector

The Front Panel alarm connector CN2 is a standard Micro-D15 connector (Molex P/N 836129020). The mating connector is a Molex 83422-9014 or equivalent.

2.3.5 SAP FRU LEDs

The FRU LEDs are user defined and are connected to the PCA 9555 I^2C-bus I/O port on the SAP. Please reference the Schroff Shelf Management Mezzanine (**ShMM**) ATCA Carrier Board-III Version Technical Specification, DOC-SHMM-ACB-III-TS, for more information.

2.3.6 SAP SEEPROM

The SEEPROM is connected to the Master-Only I^2C-bus and is located at I^2C address 0xa6/0x53. It is a Microchip 24LC256 device.

2.3.7 SAP Temperature sensor

The LM75 temperature sensor is connected to the Master-Only I^2C-bus and is located at I^2C address 0x96/0x4b

2.3.8 SAP Connectors and Indicators

This section details the **SAP** connectors and indicators.

2.3.8.1 LEDs

Designation	Signal Name	Color	Description
D6	L7	Red	Critical Alarm, from U3, I/O 0.7
D7	L6	amber	Major Alarm, from U3, I/O 0.6
D8	L5	yellow	Minor Alarm, from U3, I/O 0.5
D9	L0	red	FRU1, from U3, I/O 1.7
D10	L1	red	FRU2, from U3, I/O 1.6
D11	L2	red	FRU3, from U3, I/O 1.5

2.3.8.2 CN5, CN6, RS-232 Connector

The Front Panel serial connectors CN5 and CN6 are RJ45 DTE serial port with the pin definition according to EIA/TIA-561:

Pin	RS-232	ShMM-300	Type	Description
1	DSR	DSR	In	Data Set Ready
2	DCD	DCD	In	Data Carrier Detect
3	DTR	DTG	Out	Data Terminal Ready
4	SG	GND		Signal Ground
5	RxD	RXD0	In	Receive Data
6	TxD	TXD0	Out	Transmit Data
7	CTS	CTS	In	Clear To Send
8	RTS	RTS	Out	Request To Send

2.3.8.3 *CN2 Telco Alarm Connector*

The Front Panel alarm connector CN2 is a standard Micro-D15 connector (Molex P/N 83612-9020) with the following pin definition:

CN2 Pin	Name	Description
1	AMIR+	MinorReset+
2	AMIR-	MinorReset-
3	AMAR+	MajorReset+
4	AMAR-	MajorReset-
5	ACNO	CriticalAlarm - NO
6	ACNC	CriticalAlarm - NC
7	ACCOM	CriticalAlarm - COM
8	AMINO	MinorAlarm – NO
9	AMINC	MinorAlarm – NC
10	AMINCOM	MinorAlarm – COM
11	AMANO	MajorAlarm – NO
12	AMANC	MajorAlarm – NC
13	AMACOM	MajorAlarm – COM
14	APRCO	PwrAlarm – NO
15	APRCOM	PwrAlarm - COM
-	Gnd	Not utilized

,

2.3.8.4 *CN1 Signal Connector Column*

	CN1 Signal Connector Column		
Pin	A	B	C
1	SDA_SAP	GND	I2C_PWR
2	SCL_SAP	INT#	GND
3	INV_ACTIVE_2	1_RXD0	2_RXD0
4	1_DSR	1_DTR	2_DSR
5	2_CD	2_DTR	1_CD
6	1_CTS	2_CTS	1_RTS
7	2_TXD0	1_TXD0	1_TXD1
8	1_RXD1	2_RTS	2_RXD1
9	GND	2_TXD1	NC
10	INV_ACTIVE_1	NC	SHELF_GND

2.3.9 SAP I²C addresses

The SAP board incorporates a 24LC256 SEEPROM to store FRU data, a LM75 temperature sensor for measuring the board temperature and a PCA9555. Following table shows the I²C-bus addresses.

Device	SEEPROM	LM75	PCA9555
Address	0xa6/0x53	0x96/0x4b	0x44/0x22

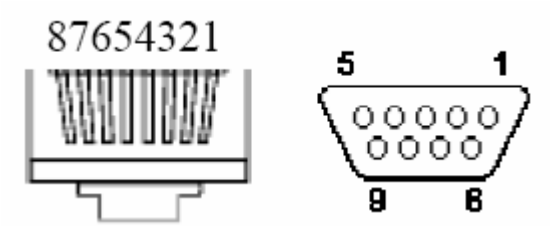
The PCA9555 device controls the status of the LEDs, reads the status of the push button switch and controls the telco alarm relays. Following tables shows the functions of the I/O pins on the PCA9555.

PCA9555 I/O pins	Function	State
0.0	Power Alarm to telco relays output	1 = relays powered
0.1	Minor Alarm to telco relays output	1 = relays powered
0.2	Major Alarm to telco relays output	1 = relays powered
0.3	Critical Alarm to telco relays output	1 = relays powered
0.4	N/C	Pulled High
0.5	Minor alarm LED (red) output	1 = On
0.6	Major alarm LED (red) output	1 = On
0.7	Critical alarm LED (red) output	1 = On
1.0	Alarm cutoff push button input	0 = push button pushed
1.1	Minor Clear input	0 = voltage applied to input pins
1.2	Major Clear input	0 = voltage applied to input pins
1.3	N/C	Pulled High
1.4	N/C	Pulled High
1.5	FRU3 LED output	1 = On
1.6	FRU2 LED output	1 = On
1.7	FRU1 LED output	1 = On

2.3.10 SAP Serial Console Cables

ShMM-ACB-III RJ45 to 9 Pin PC Serial Console Cable

RJ45 pin	RJ45 Signal Name	PC 9 pin D-Sub Female	Signal Name
1	DSR	4	DTR
2	CD	N/C	CD
3	DTR	6	DSR
4	Ground	5	Ground
5	RXD0	3	TX
6	TXD0	2	RX
7	CTS	7	RTS
8	RTS	8	CTS



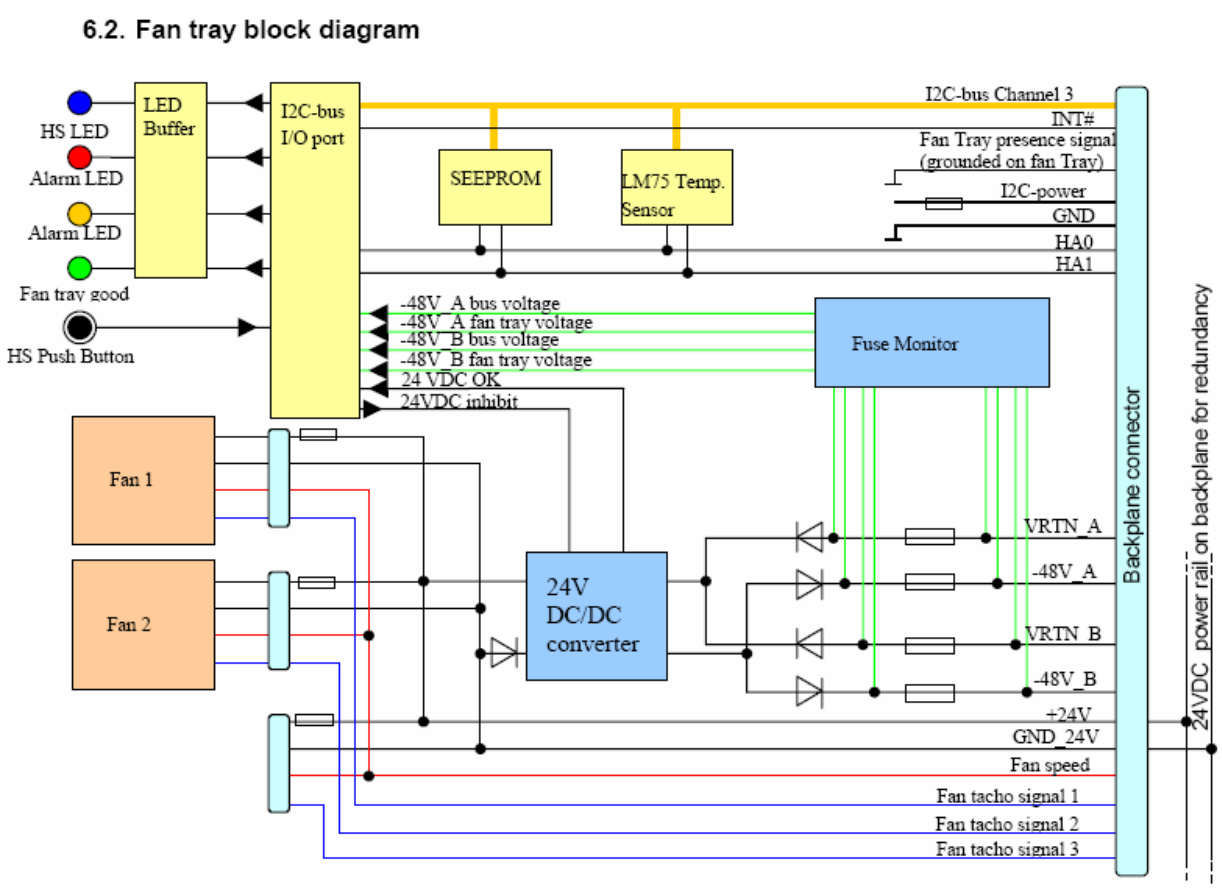
RJ45 and 9 pin D-Sub connectors are viewed with the cable going away from you.

2.4 Fan Trays

2.4.1 Cooling Capacity

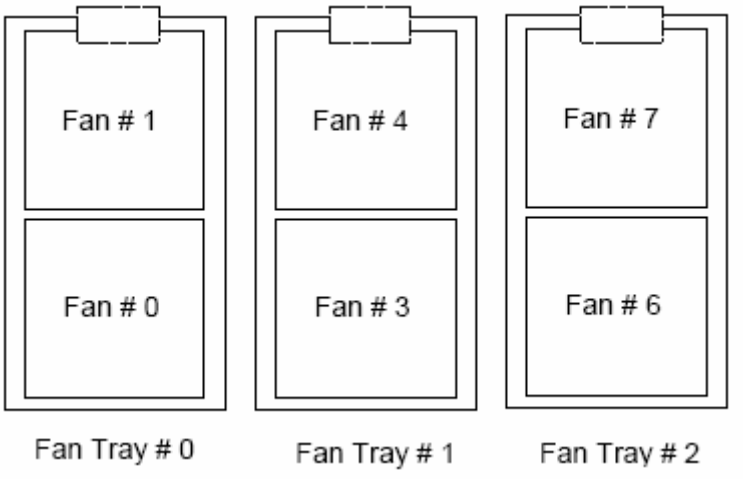
The 14 Slot ATCA shelf contains three front pluggable fan trays. Each fan tray contains two Papst DV5214N/2 270 m3/h fans for cooling the front boards, rear ventilation is provided by guiding air through backplane cutouts to the RTM section of the Shelf. This provides sufficient cooling for 14 200W Front Boards and 14 15W Rear Transition Modules. Since the RTMs are powered from the Front Boards the total power consumption of the Front Board and RTM pair is limited to 200 W

2.4.2 Fan tray block diagram



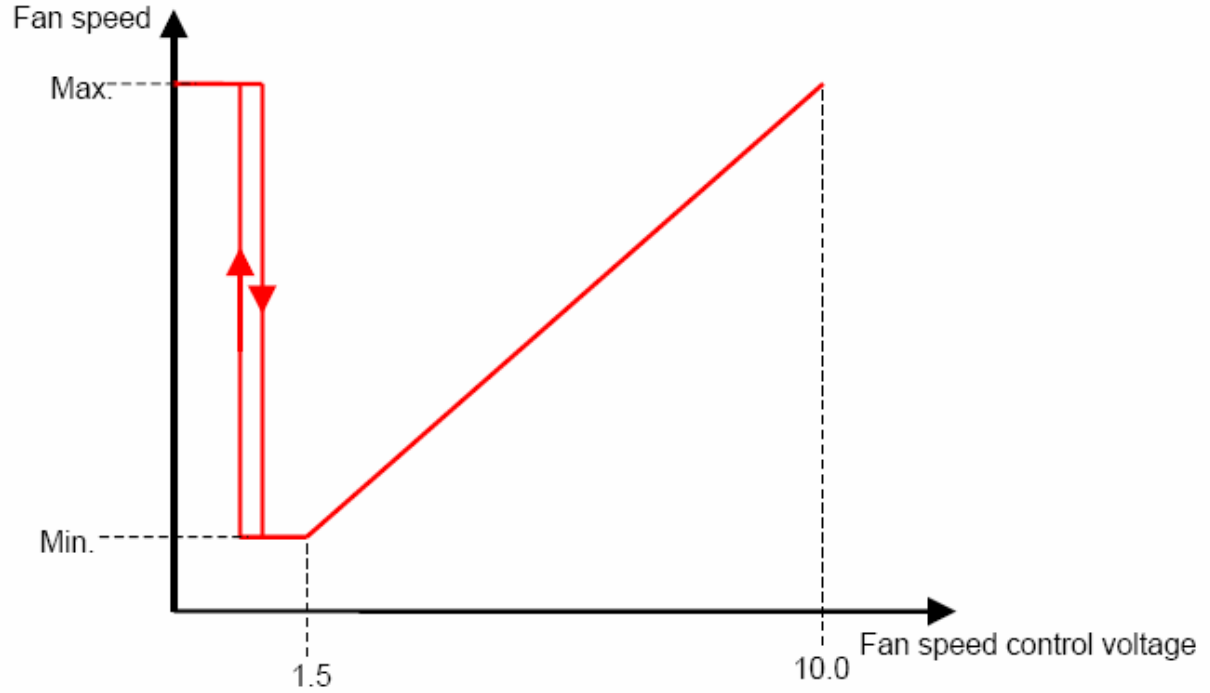
2.4.3 Removable Fan Tray

The three modular fan trays can easily be removed after removing the fan tray cover at the front of the Shelf. The fan trays plug into the ATCA-Backplane by a 24 pin Molex connector type Mini-Fit P/N 15-24-7241. The mating receptacle on the Control Backplane is Molex type Mini-Fit part number 43879-0032 or equivalent. The display module at the front of the fan tray provides a blue hot-swap LED, amber and red alarm LEDs, and a green fan-tray-good LED as well as a hot swap push button.



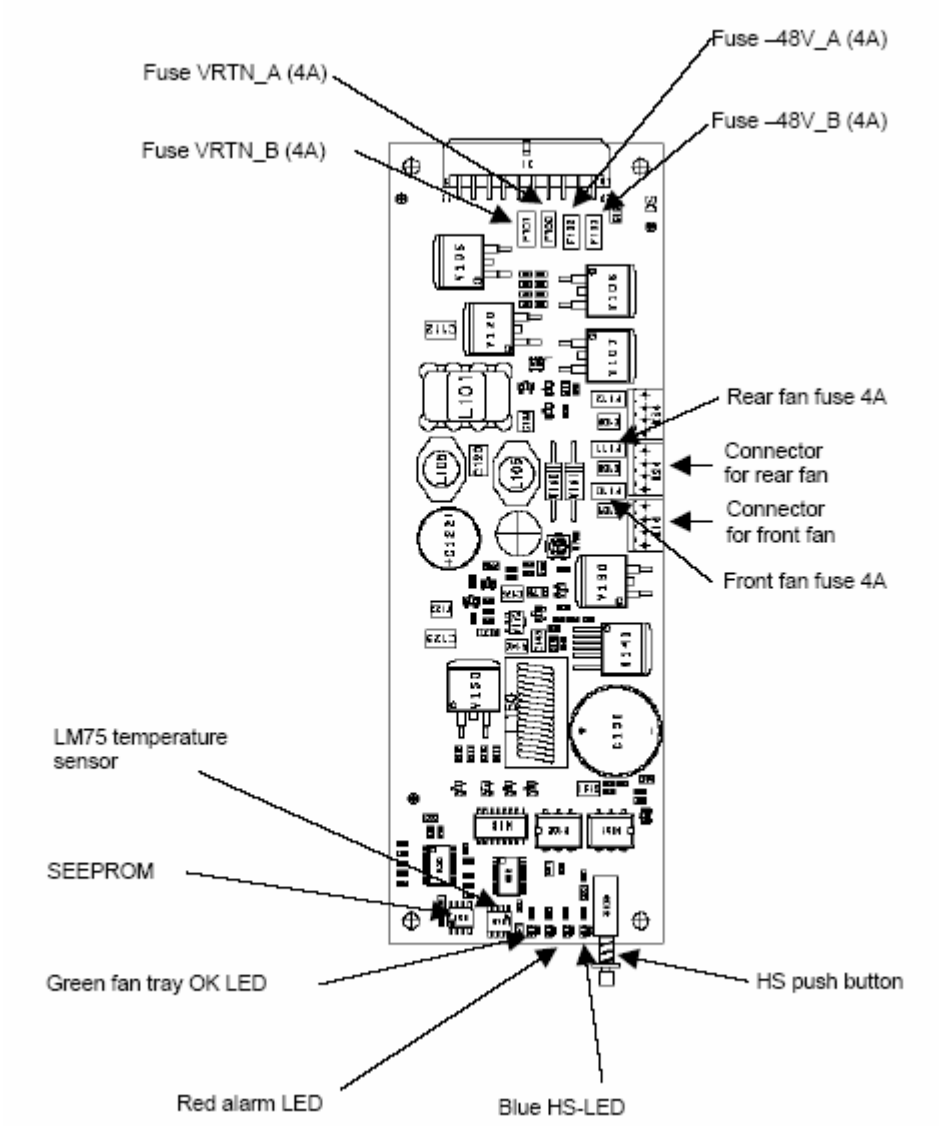
2.4.4 Fan speed control signal

The PWM fan speed signal of the ADM1026 pin 18 is opto-isolated, converted into a 1.5V...10VDC fan speed signal on the ShMM-ACB-III, and then fed to the fans on the fan trays. Normal fan speed control operates between 1.5VDC (min. speed) and 10VDC (max. speed). All fans in the shelf run at the same fan speed. In case of the absence of any ShMM-ACB-III in the shelf or in case of a short circuit on the fan control, the fans run at max. speed. The following figure shows the characteristic fan speed curve.



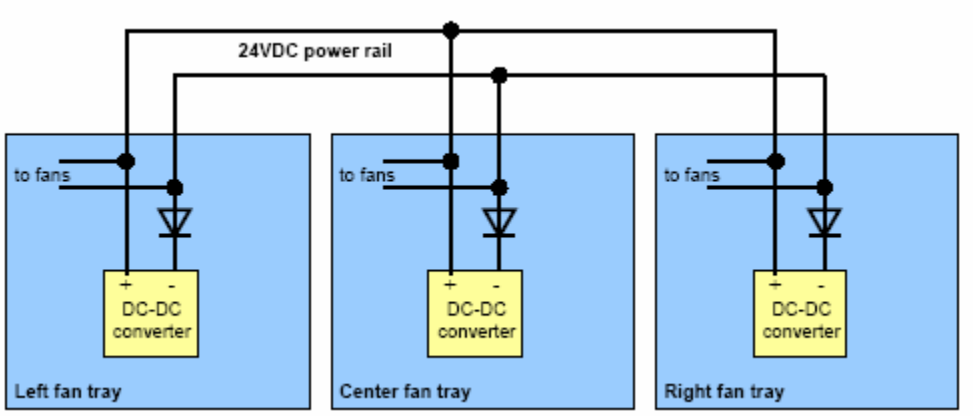
2.4.5 Fan tray control board

The fan tray control board is mounted horizontally at the front of the fan tray. The display provides a blue Hot Swap LED, a red alarm LED, a green fan tray OK LED and a Hot Swap push button. The fan tray control board does not provide user access.



2.4.6 Redundant DC-DC fan power supply

The input voltage to the shelf may vary from –72VDC to –40.5 VDC. A 75 Watt DC-DC converter on the fan tray control board provides a constant 24VDC to the so that the fan speed can be regulated. It is fed from the redundant –48V_A and -48_B backplane power rails. The 24V output of each DC-DC converter is fed to a 24V power rail on the backplane for redundancy. In case of a failure of one DC-DC converter in a fan tray, power is provided by the DC-DC converters in the remaining two fan trays. The following diagram shows the redundancy operation of the 24VDC fan voltage



2.4.7 Fan tray signals

The fan tray provides additional signals for voltage monitoring, switching-off the DC-DC converter (to power down the fans) and provides a 24VDC OK signal. These signals are controlled by a PCA9555 I^2C device.
Following table shows a list of the signals provided.

Signal	description
-48V_A bus voltage	Indicates the presence of the –48_A / VRTN_A on the backplane side of the fan tray's mains fuse
-48V_A fan tray voltage	Indicates the presence of the –48_A / VRTN_A on the fan tray side of the fan tray's mains fuse
-48V_B bus voltage	Indicates the presence of the –48_B / VRTN_B on the backplane side of the fan tray's mains fuse
-48V_B fan tray voltage	Indicates the presence of the –48_B / VRTN_B on the fan tray side of the fan tray's mains fuse
24VDC OK (converter good)	Indicates the proper functioning of the DC-DC converter
24VDC Inhibit (converter off)	Turns off the DC-DC converter 24VDC output to stop the fans

2.4.8 Fan tray Temperature sensor

A LM75 temperature sensor on the fan tray is connected to Channel 3 of the Master-Only I^2C-bus. It provides the inlet temperature of the shelf and is located at the I^2C addresses 0x98 (left), 0x9a (middle) and 0x9c (right)

2.4.9 Fan tray control board SEEPROM

The Microchip 24LC256 SEEPROM is connected to Channel 3 of the Master-Only I^2C-bus and is located at I^2C addresses 0xa8 (left) 0xaa (middle) and 0xac (right).

2.4.10 Fan tray Connectors and Indicators

2.4.10.1 LEDs

Designation	Color	Description
V65	blue	Hot Swap LED
V66	amber	Alarm LED amber
V67	red	Alarm LED red
V68	green	Fan tray OK LED

2.4.10.2 Fan tray connector pinouts

Backplane connector type Mini-Fit P/N 15-24-7241

Pin #	Left fan tray	Center fan tray	Right fan tray	description
1	INT#	INT#	INT#	Interrupt Request (Master-Only I2C-bus)
2	GND HA1	GND		Hardware HA1 address of fan trays
3	GND	GND	GND	Logic Ground
4	I2C_PWR	I2C_PWR	I2C_PWR	3.3VDC power supply for Shelf I2C-devices
5				
6	-48V_B_2	-48V_B_4	-48V_B_4	-48VDC supply voltage
7	VRTN_B_2	VRTN_B_4	VRTN_B_4	Voltage Return
8				
9	+24V_DC	+24V_DC	+24V_DC	24VDC power rail fan tray voltage
10	PWM_C	PWM_C	PWM_C	Opto Isolated PWM fan speed signal, collector (not used on fan tray)
11	FANTK2	FANTK5	FANTK8	Fan tachometer outputs
12	FANTK3	FANTK6	FANTK9	Fan tachometer outputs
13	FANP0#	FANP1#	FANP2#	Fan Tray presence signal (3.3V = fan tray is missing)
14	GND HA0		GND	Hardware HA0 address of fan trays
15	FT_SCL	FT_SCL	FT_SCL	Master-Only I3C-bus channel 3
16	FT_SDA	FT_SDA	FT_SDA	Master-Only I3C-bus channel 3
17				
18	-48V_B_1	-48V_B_1	-48V_B_3	-48VDC supply voltage
19	VRTN_B_1	VRTN_B_1	VRTN_B_3	Voltage Return
20				
21	24V_RTN	24V_RTN	24V_RTN	24VDC return voltage
22	FAN_SPEED	FAN_SPEED	FAN_SPEED	DC fan speed control input
23	PWM_E	PWM_E	PWM_E	Opto Isolated PWM fan speed signal, emitter (not used on fan tray)
24	FANTK1	FANTK4	FANTK7	Fan tachometer outputs

X10, X20: fan connectors

Pin #	signal	description
1	FAN+ (24V)	Redundant +24VDC fan power
2	FANGND	Fan power GND
3	FANTK	Tachometer output of fan
4	FANSPEED	Fan speed input of fan

2.4.11 Fan Tray I²C addresses

The fan tray board incorporates a 24LC256 SEEPROM to store FRU data, a LM75 temperature sensor for measuring the board temperature and a PCA9555 for I/O. Geographic address pins on the fan tray determine the I^2C addresses of the devices. The following table shows the I^2C device addresses.

Note :
The addresses are shown in 8 bit/7 bit format.

Fan Tray Location	SEEPROM	LM75	PCA9555
Left	0xa8/0x54	0x98/0x4c	0x48/0x24
Center	0xaa/0x55	0x9a/0x4d	0xa4/0x25
Right	0xac/0x56	0x9c/0x4e	0x4c/0x26

The PCA9555 device controls the status of the LEDs, reads the status of the push button switch, reads the status if the 24VDC power supply, and can disable the output from the 24VDC power supply. The following tables shows the functions of the I/O pins on the PCA9555.

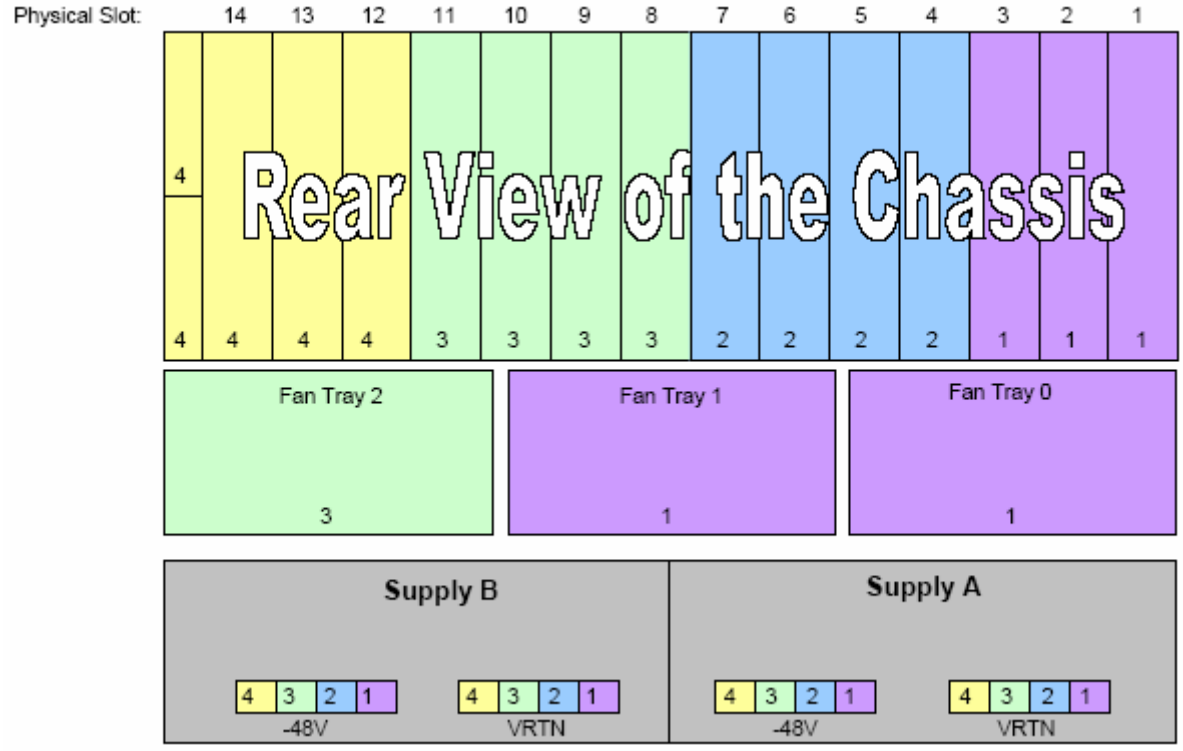
PCA9555 I/O pins	Function	State
0.0	-48A bus voltage	0 = Voltage OK
0.1	-48A fan tray voltage	0 = Voltage OK
0.2	-48B bus voltage	0 = Voltage OK
0.3	-48B fan tray voltage	0 = Voltage OK
0.4	24VDC OK	0 = Voltage OK
0.5	24VDC inhibit	0 = output inhibited
0.6	N/C	Pulled high
0.7	N/C	Pulled high
1.0	N/C	Pulled high
1.1	N/C	Pulled high
1.2	N/C	Pulled high
1.3	Green LED	1 = On
1.4	Push-button switch	1 = Out, 0 = pushed
1.5	Red LED	1 = On
1.6	Amber LED	1 = On
1.7	Blue LED	1 = On

Configuration registers 6 and 7 in the PCA9555 control the direction of the I/O pins. Normally a 0xdf is written to register 6 and a 0x17 is written to register 7. This will make all of the pins inputs except for 0.5, 1.7, 1.6, 1.5 and 1.3.
Configuration registers 4 and 5 in the PCA9555 control the inversion of the I/O pins. Normally a 0x00 is written to register 4 and a 0x00 is written to register 5. This will make the polarity of all of the pins the same as the bits in the registers

2.5 Shelf Power Distribution

2.5.1 Power Distribution

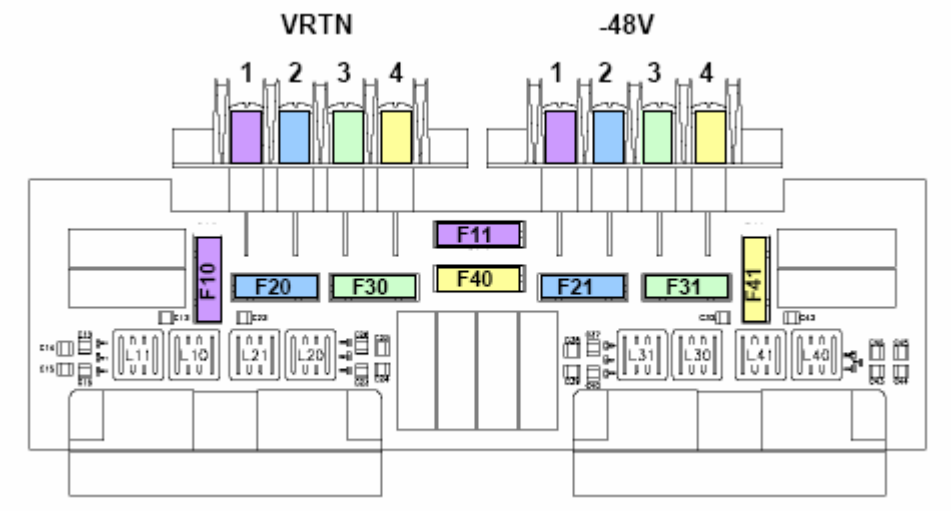
There are two plugable redundant PEMs (Power Entry Module) at the rear bottom side of the Shelf. Each PEM provides power terminals for four 25A power feeds. There are two 30A fuses for each power feed at –48V and VRTN. Power filtering consisting of filtered power terminals at the rear panel of the PEM and a discrete line-filter is provided for each power input. The minimum input voltage for the Shelf is –40.5 VDC and the maximum is –72 VDC. The shelf is capable of distributing 200 W to all 14 ATCA boards, 30 W to each Dedicated Shelf Manager and 75 W to each fan tray.
A PEM presence signal is grounded by a PEM and monitored by the shelf manager to indicate the presence of the PEM in the Shelf.
A stud is provided at the rear side of the shelf that is wired to the Shelf's Shelf Ground.
Each of the four redundant power feeds supplies power to a separate part of the backplane. The left hub slot is powered by feed 2 and the right hub slot is powered by feed 3. Fan Tray 0 and Fan Tray 1 are powered by feed1 and Fan Tray 2 is powered by feed 3.
The figure below shows the power distribution of the four power feeds within the Shelf



2.5.2 Fuse Protection

The four feeds of each power supply are protected by a 30 A fuse in the –48V path and a 30 A fuse in the VRTN path. The fuses are inside the PEM and can be exchanged after extracting the PEM from the Shelf.

The following figure shows the position of the fuses inside the PEM:

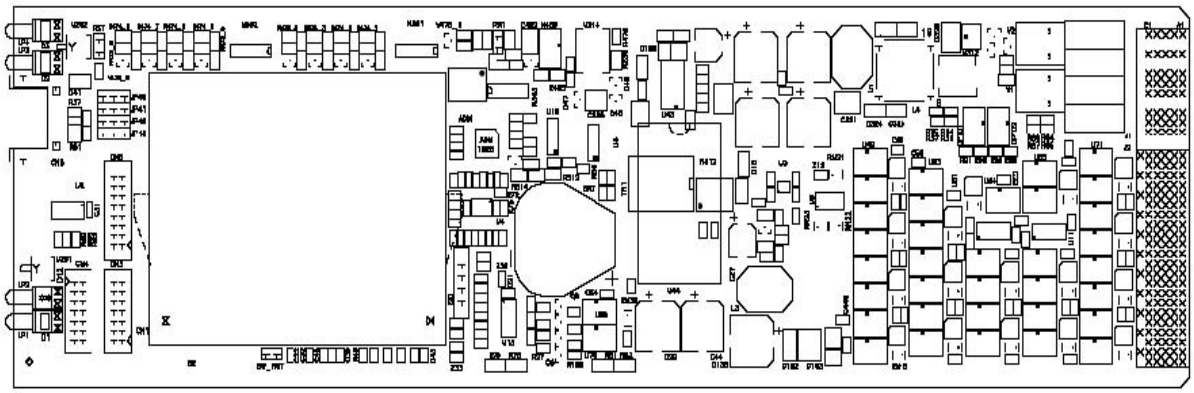


Fuse	Protected Circuit	Value
F10	VRTN_1	30 A
F11	-48V_1	30 A
F20	VRTN_2	30 A
F21	-48V_2	30 A
F30	VRTN_3	30 A
F31	-48V_3	30 A
F40	VRTN_4	30 A
F41	-48V_4	30 A

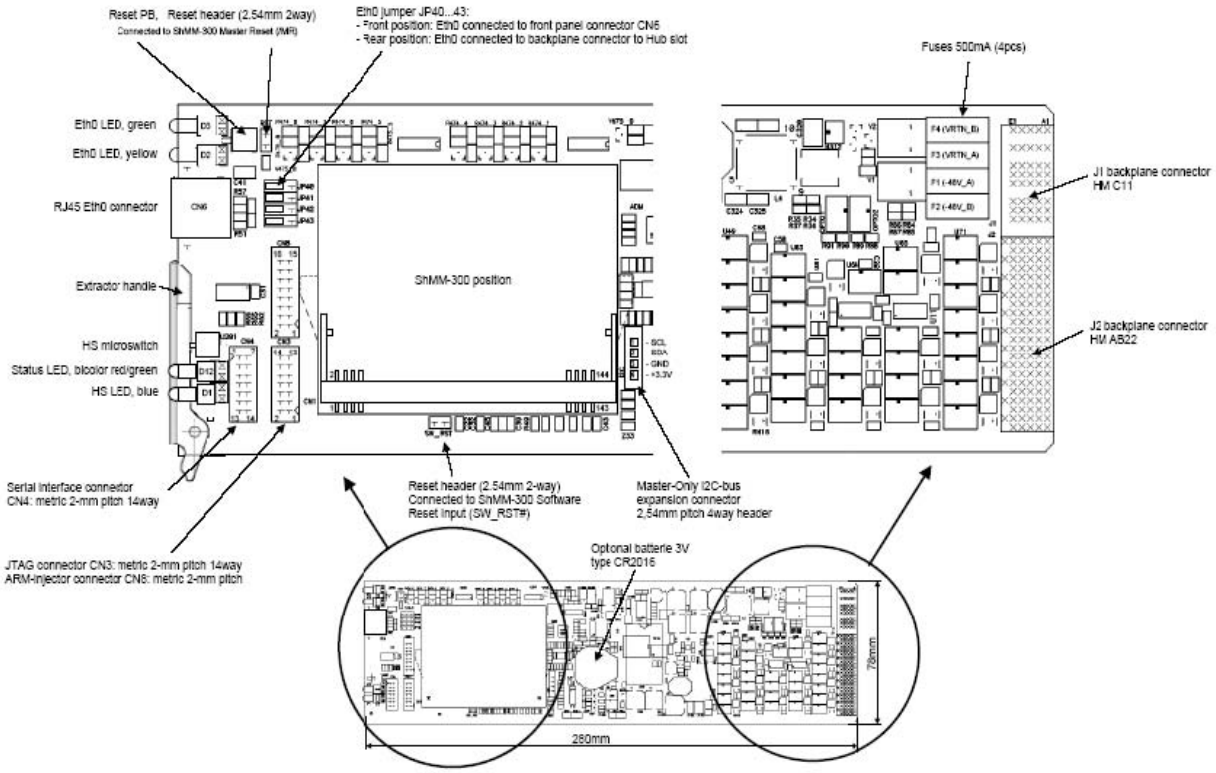
2.6 Shelf Managers

2.6.1 Introduction

The 14 slot Shelf has bused IPMBs and is designed to work with Shelf Managers that are located in the Dedicated Shelf manager slots. The following section describes the Schroff **ShMM-ACB-III** Dedicated Shelf Manager which incorporates the IPM Sentry ShMM-300. See the Schroff Shelf Management Mezzanine (**ShMM**) ATCA Carrier Board-III Technical Specification for more details. The Shelf Manager Board also contains the Fan Controller for the three pluggable fan trays.
Note: If only one Dedicated Shelf Manager is installed it should be installed in the upper slot.



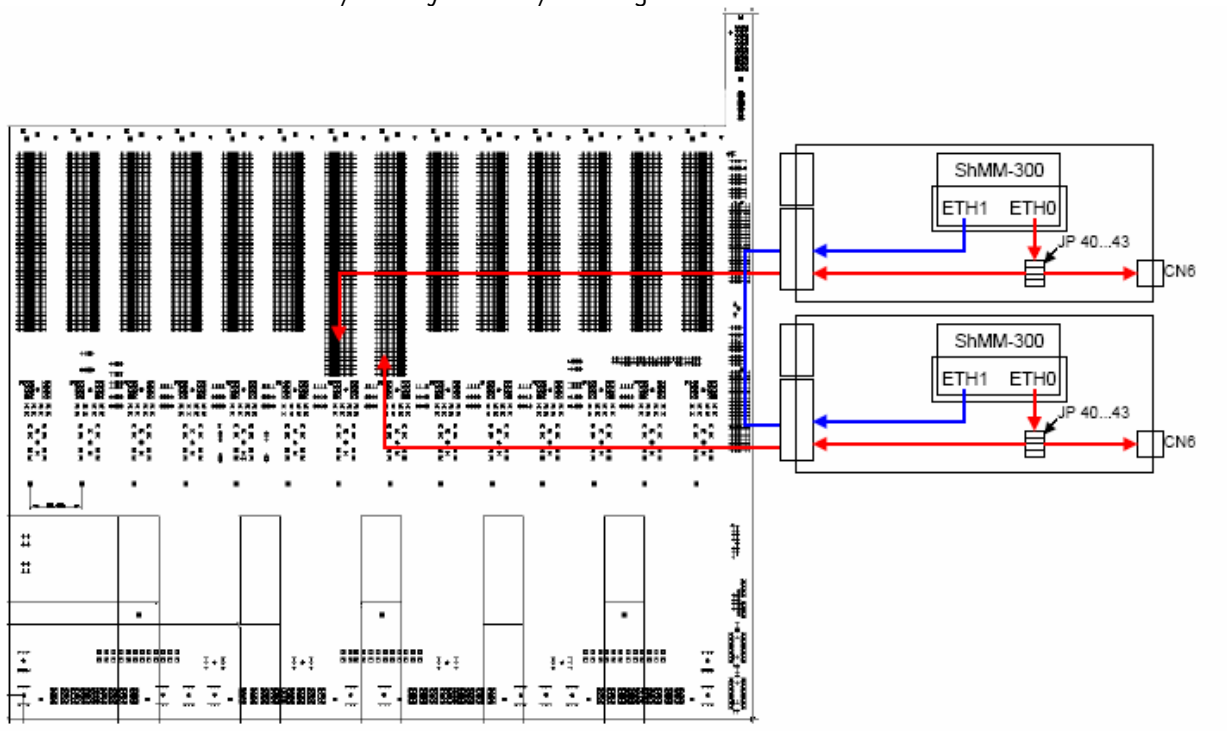
2.6.2 Shelf Manager Layout



2.6.3 Ethernet Channels

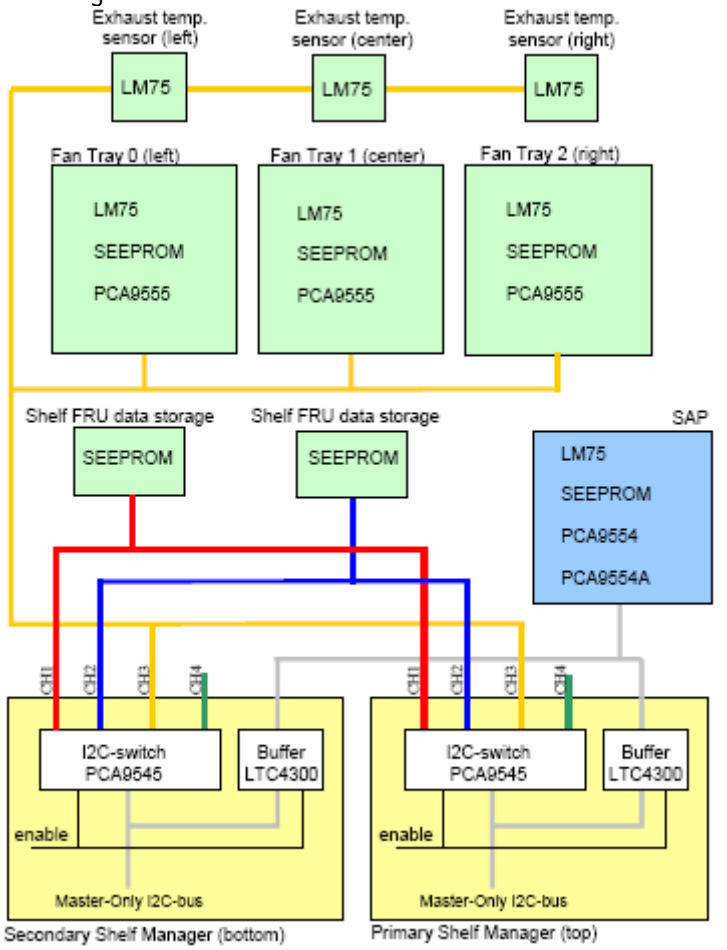
The ShMM-ACB-III provides two 10/100 Ethernet interfaces. The first Ethernet channel (ETH0) is routed to the jumpers JP40 through JP43 and then to either the RJ-45 connector (CN6) on the front panel or to the connector J2. The backplane routes this channel to the ShMC port on the corresponding Base Interface Hub board. The second Ethernet channel (ETH1) is routed to connector J2. The backplane routes the second channel to the other ShMM-ACB-III. The second Ethernet channel is used to exchange redundancy messages between the ShMM-ACB-III. Both Ethernet ports support 10 Mb (10BASE-T) and 100 Mb (100BASE-TX) connections. The ShMM-ACB-III provides two status LEDs for the first Ethernet channel (ETH0). The LEDs are:

- Yellow LED D2 indicates 100 Mb speed when lit
- Green LED D3 indicates link/activity when lit/blinking.



2.6.4 Master-Only I²C Bus

The master-only I²C bus is used internally on the **ShMM-300** for the RTC and SEEPROM devices. The **ShMM-ACB-III** also has a number of onboard I²C devices connected to the master-only I²C bus. These devices read the slot's Hardware Address, exchange the hardware status with the backup **ShMM-ACB-III** and communicate with the System Management controller ADM1026. The master-only I²C bus is fed to a PCA9545 4-channel switch and then routed to backplane connector J2 and then to the FRU SEEPROMs (Channel 1 and 2), to the exhaust temperature sensors and fan trays (channel 3). The master only I²C-bus is buffered by a LTC4300 device and is then routed to the SAP. The Active signal of the ShMM-300 is used to enable the I²C switch and the LTC4300 buffer so that only the active Shelf Manager has access to the Shelf I²C-bus devices.



2.6.5 Master-Only I²C bus addresses

The following table lists all I²C bus addresses that are assigned in the Shelf

I2C addr.	ShMM-300	ACB-III	SAP	Channel 1	Channel 2	Channel 3	Channel 4
0x44 / 22			PCA9555 Telco Alarms				
0x46 / 23		PCA9554 HW-Addr					
0x48 / 44						PCA9554 fan tray 0 (left)	
0x4a / 25						PCA9554 fan tray 1 (center)	
0x4c / 26						PCA9554 fan tray 2 (right)	
0x4e / 27		PCA9555 I/O-signals					
0x5c / 2e		ADM1026					
0x90 / 48						LM75 exhaust temp. center	
0x92 / 49						LM75 exhaust temp. left	
0x94 / 4a						LM75 exhaust temp. right	
0x96 / 4b			LM75 SAP temperature				
0x98 / 4c						LM75 fan tray 0 (left)	
0x9a / 4d						LM75 fan tray 0 (center)	
0x9c / 4e						LM75 fan tray 0 (right)	
0xa0 / 50	SEEPROM						
0xa4 / 52				SEEPROM backplane	SEEPROM backplane		
0xa6 / 53			SEEPROM SAP				
0xa8 / 54						SEEPROM fan tray 0 (left)	
0xaa / 55						SEEPROM fan tray 1 (center)	
0xac / 56						SEEPROM fan tray 2 (right)	
0xd0 / 61	RTC DS1337						
0xe0 / 70		I2C-bus switch PCA9545					

2.6.6 Shelf Manager Console Serial Interface

2.6.6.1 RS-232 Console Interface

The **ShMM-ACB-III** provides an RS-232 console interface that provides a full set of the RS-232 signals, including modem control. These signals are routed to the ACB-III backplane connector and then to a RS232 console interface connector (8-pin modular receptacle, DTE) on the front panel of the SAP. The RS-232 connector is routed to the first serial port of the **ShMM-300** and is implemented using the built-in UART/modem port of the C5471.
The RS 232 signals are also routed to connector CN4 on the ACB-III.

Note :
The serial console is normally configured for 9600 baud, no parity, 8 data bits, and one stop bit.

2.6.7 System Management Controller (ADM1026)

The **ShMM-ACB-III** implements a thermal and system management controller function using the Analog Devices ADM1026 device. The ADM1026 is connected to the master-only I^2C bus and resides at 0x5c. The fan tachometer inputs, fan tray presence detection inputs, and the PWM output signals are routed from the ADM1026 to the Fan Controller section of the **ShMM-ACB-III**, through the ATCA backplane, and then to the fan Trays.
An onboard temperature sensor is built into the ADM1026. It provides readings of the chip temperature with a 1^0C resolution (8 bit) and a $+/-3^0C$ accuracy.

2.6.8 Temperature Monitor (LM75 or DM75)

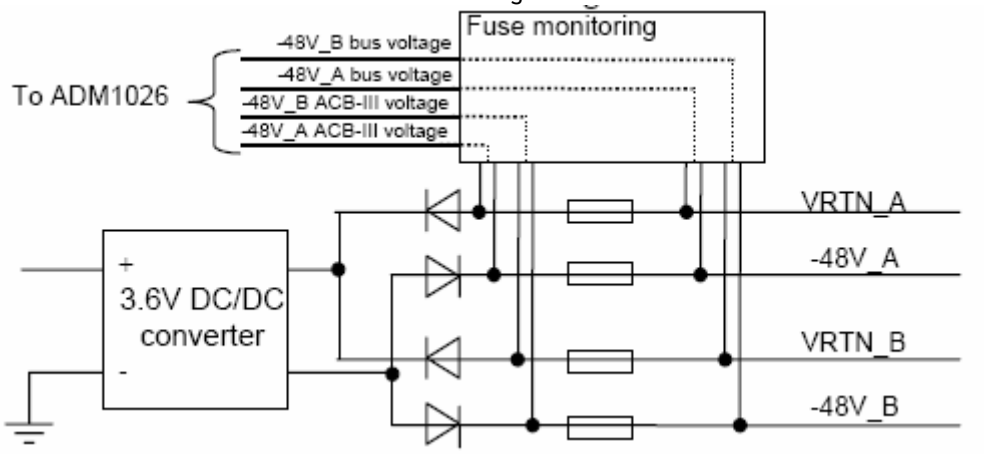
The **ShMM-ACB-III** can implement a thermal watchdog function, using the National Semiconductor LM75 device. Seven LM75 are installed inside the ATCA Shelf and connected to the temperature sensor expansion connector "temp_1" on the ATCA-Backplane. An LM75 can provide temperature readings with a programmable resolution (0.5..0.0625°C, 9..12 bit) and a +/-2°C accuracy.

2.6.9 Front panel RESET push button

The ShMM-ACB-III provides a front panel reset push-button. It is connected to the ShMM-300's /MR signal on ShMM-300 CN1 connector pin 61. The push-button can be accessed through the front panel hole with a approx. 8 mm long pointed device.

2.6.10 Hardware Monitoring and Control

The **ShMM-ACB-III** provides hardware monitoring and control functions. The –48 VDC inputs on the backplane side as well as the –48V DC on the ACB-III side of the fuses are connected to the ADM1026 chip through optical-isolation devices. This allows to detect a missing supply voltage as well as blown fuse on the ShMM-ACB-III See figure below.



Following table shows a list of the signals provided.

Signal	description
-48V_A bus voltage	Indicates the presence of the –48_A / VRTN_A on the backplane side of the ACB-III's mains fuse. This signal is connected to pin 46 of the ADM1026
-48V_A ACB-III voltage	Indicates the presence of the –48_A / VRTN_A on the ACB-III side of the ACB-III's mains fuse. This signal is connected to pin 44 of the ADM1026
-48V_B bus voltage	Indicates the presence of the –48_B / VRTN_B on the backplane side of the ACB-III's mains fuse. This signal is connected to pin 45 of the ADM1026
-48V_B ACB-III voltage	Indicates the presence of the –48_B / VRTN_B on the ACB-III side of the ACB-III's mains fuse. This signal is connected to pin 43 of the ADM1026

2.6.11 Hardware Address

The **ShMM-ACB-III** reads the Dedicated Shelf Manager slot Hardware Address and parity bit from the backplane connector. The hardware address of the primary (upper) shelf manager is 0x08, which is IPMB-address 0x10, the hardware address of the secondary (bottom) shelf manager is 0x98 (including parity bit), which is IPMB-address 0x12.

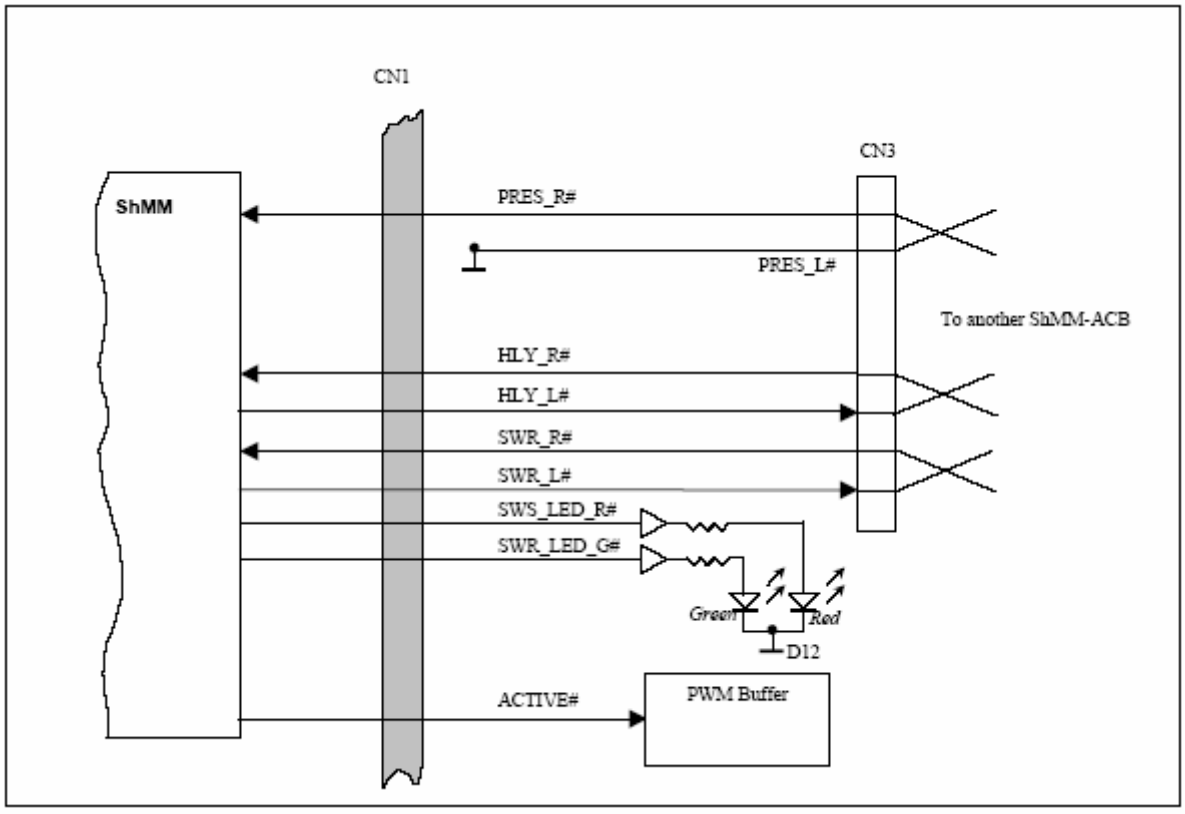
2.6.12 Redundancy Control

The **ShMM-ACB-III** supports redundant operation with automatic switchover using redundant **ShMM-ACB-IIIs**. In a configuration where two **ShMM-ACB-III** are present, one acts as the active Shelf manager and the other as a standby. The **ShMM**s monitor each other and either can trigger a switchover if necessary.

2.6.12.1 Hardware Redundancy Interface

The hardware redundancy interfaces of the **ShMM-ACB-III** are as follows:

- Cross connected **ShMM-300** present input (PRES_L#) and output (PRES_R#)
- Cross connected **ShMM-300** health input (HLY_L#) and output (HLY_R#)
- Cross connected negotiation input (SWR_L#) and output (SWR_R#)
- Active output from the ShMM-300 (ACTIVE#) that is used by the **ShMM-ACB-III** to enable interfaces that must be exclusively driven by the active **ShMM-300**, specifically, PWM and fan tachometer buffers
- Bi-color status LED (D12) using the SWS_LED_G# (Green) and SWS_LED_R# (Red) signals
- The PRES_R# signal is grounded on the **ShMM-ACB-III**. This indicates the presence of the **ShMM-ACB-III** in the Shelf to a redundant **ShMM-ACB-III**.



2.6.12.2 Board Presence

The **ShMM-ACB-III** grounds the PRES_L# output signal when it is installed into the ATCA backplane. This provides an input (PRES_R#) into the other **ShMM-ACB-III**, which is responsible for taking appropriate hardware action as well as signaling the condition to the software. The **ShMM-ACB-III** provides a hot swap LED using the D13 blue LED. This LED indicates when it is safe to "remove" the **ShMM-300** from a live Shelf and functions as follows:

State	Condition
Off	The **ShMM-ACB-III** is not ready to be removed/disconnected from the Shelf
Blue	The **ShMM-ACB-III** is ready to be removed/disconnected from the Shelf
Long-blink	The **ShMM-300** is activating itself
Short-blink	Deactivation has been requested

2.6.13 Reprogramming the FLASH Memory in the ShMM-ACB-III

This section describes the procedures for reprogramming the FLASH memory in the **ShMM-ACB-III**.

2.6.13.1 Introduction

The Shelf Management software is stored in three parts in the FLASH memory on the ShMM; ARMboot, sentry.kernel, and sentry.rfs. The ARMboot program is usually permanent and allows the user to configure the software and network environment of the ShMM and install new software from a network server. Sentry.kernel is the ShMM's Linux kernel and sentry.rfs is the ShMM's root file system.

2.6.13.2 Reprogramming the ShMM-ACB-III from a TFTP server

You can download new software from a TFTP server and install it into the **ShMM-ACB-III**. A TFTP server is included with most UNIX and Linux systems. The new **ShMM-ACB-III** software is usually stored on the /tftpboot directory on the TFTP server. Download the new **ShMM-ACB-III** software (sentry.kernel and sentry.rfs) from http://www.a-tca.com/ software and save it in the /tftpboot directory of the TFTP server.

The first Ethernet port of the **ShMM-ACB-III** must be connected to the TFTP server. An easy way to do this is to set the JP40-JP43 jumpers in position 1-2 and connect an Ethernet cable between CN6, the **ShMM-ACB-III's** front panel Ethernet connector, and the TFTP server. You could also set the JP40-JP43 jumpers in position 2-3 and connect the TFTP server to the ATCA Base Interface Hub. Connect a serial terminal or emulator to the CN5 console port on the front of the **ShMM-ACB-III**. Set the terminal to 9600, N, 8, 1. When the **ShMM-ACB-III** is first powered up a message is displayed on the console that says: "Hit any key to stop autoboot:". You must hit a key within 3 seconds to stop the autoboot. The **ShMM-ACB-III** will now allow you to interact with the ARMboot program.

You must configure the TCP/IP address where the **ShMM-ACB-III** expects to find the TFTP server. Enter the following commands on the **ShMM-ACB-III** console: (the text in **bold** is what you type)
ShMM # **setenv serverip xxx.xxx.xxx.xxx** (xxx.xxx.xxx.xxx is the TCP/IP address of the TFTP server)
ShMM # **erase 1:9-70** ShMM # **erase 2:1-70** ShMM # **tftp 10400000 sentry.kernel** ShMM # **cp.b 10400000 20000 efec4** (the last number is the Bytes Transferred that was reported at the completion of previous TFTP command and will vary with different software versions) ShMM # **tftp 10400000 sentry.rfs** ShMM # **cp.b 10400000 120000 2ab840** (the last number is the Bytes Transferred that was reported at the completion of previous TFTP command and will vary with different software versions)

ShMM # **reset**

The **ShMM-ACB-III** will now reboot and run the new software.

Note :
Before you boot the ShMM-ACB-III after installing new software you will need to configure the TCP/IP address and netmask with the following commands.

ShMM # **setenv ipaddr xxx.xxx.xxx.xxx** (xxx.xxx.xxx.xxx is the TCP/IP address of the ShMM-ACB-III)
ShMM # **setenv netmask xxx.xxx.xxx.xxx** (xxx.xxx.xxx.xxx is the netmask of the network segment)

Note :
If your management client is not on the same network segment as the ShMM-ACB-III then you may have to configure the network gateway TCP/IP address with the following command.

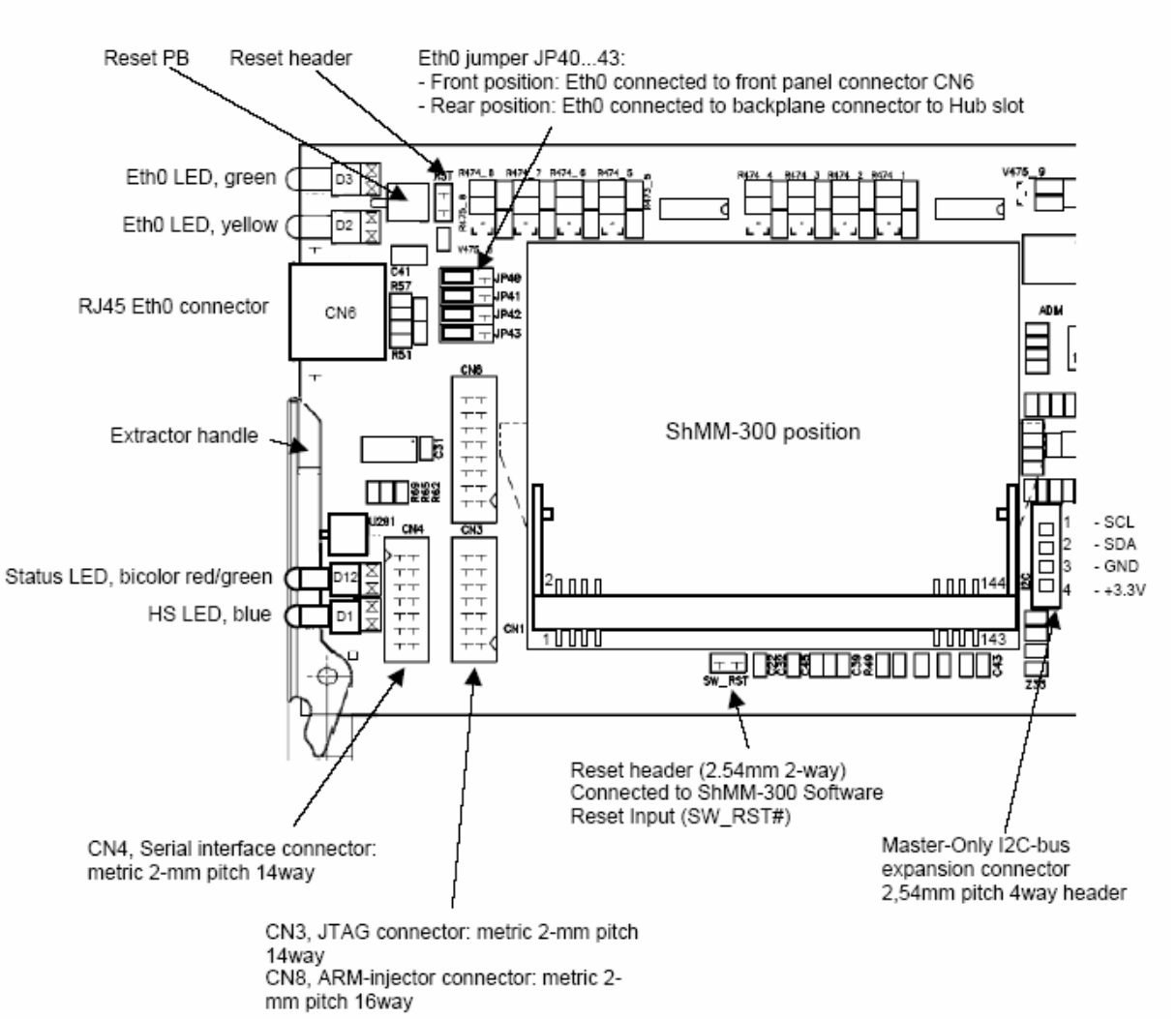
ShMM # **setenv gateway xxx.xxx.xxx.xxx** (xxx.xxx.xxx.xxx is the TCP/IP address of the network's gateway)

2.6.13.3 Reprogramming the ShMM-ACB-II with an ARM Injector

If you have a source or binary license for the **ShMM-ACB-III** software and have an ARM Injector you can use the ARM Injector to install new software via the JTAG port. The ARM Injector connects to CN3, the JTAG connector and to CN8, the ARM Injector connector. See: http://www.montereylinux.com for more information.

2.6.14 Shelf Manager Connectors and Indicators

This section details the **ShMM-ACB-III** front panel connectors and indicators.



2.6.14.1 *CN3 and CN8, ARM Injector Connectors*

Connectors CN3 and CN8 on the ShMM-ACB-III provide connections to the JTAG port, the CMOS-level data signals for the second serial port of the **ShMM-300** (UART/IrDA port of the C5471), the **ShMM-300** reset line, the **ShMM-300** mode input, and the JTAG target device selection signal. It is compatible with the Pigeon Point Systems ARM Injector. The ARM Injector can be used to load new firmware into the FLASH memory in the **ShMM-300** and to debug the new software.
See: http://www.montereylinux.com for more information.

2.6.14.2 *CN4 Serial interface connector*

Connector CN4 provides the signals of Serial Console Interface 0. It is a metric 2mm pitch 14 way connector. The Serial Console Interface 0 of the primary Shelf Manager (top slot) is also routed to SAP connector CN6 and the Serial Interface connector 0 of the secondary Shelf Manager (bottom slot) is also routed to SAP connector CN5.

Pin #	Signal	
1	RTS	Request To Send
2, 4	GND-	Logic Ground
3	CTS	Clear To Send
5	TXD0	Serial Interface Transmit Data
7	RXD0	Serial Interface Receive Data
9	DTR	Data terminal Ready
11	CD	Carrier Detect
13	DSR	Data Set Ready
6, 8, 10, 12, 14	N/C	

2.6.14.3 ***CN6, Front Panel 10/100 Ethernet Connector***

The Front Panel Ethernet connector CN6 provides the following standard RJ-45 NIC pin definition:

Pin #	Ethernet Signal	ShMM-300 Signal
1	TX+	TX+
2	TX	TX
3	RX+	RX+
4, 5	Unused pair; terminated on **ShMM-ACB-III**	
6	RX	RX
7, 8	Unused pair, terminated on **ShMM-ACB-III**	

2.6.14.4 *I²C connector*

The I²C connector provides the SDA and SCL signals of the Master-Only I²C-bus:

Pin #	Signal Name	Description
1	SCL	Master-Only I2C-bus Serial Clock
2	SDA	Master-Only I2C-bus Serial Data

3	GND	Logic Ground
4	+3.3V	ShMM-ACB-III 3.3VDC power supply

2.6.14.5 J1, Backplane Signal Connector

	a	b	c	d	e
1	-48V_A	VRTN_A	NC	-48V_B	VRTN_B
2	Pin removed	Pin removed	Pin removed	Pin removed	Pin removed
3	SHELF_GND	SHELF_GND	SHELF_GND	SHELF_GND	SHELF_GN D
4	Pin removed	Pin removed	Pin removed	Pin removed	Pin removed
5	FANTK1	FANTK2	FANTK3	FANTK4	FANTK5
6	FANTK6	FANTK7	FANTK8	FANTK9	PWM_FAN_ C
7	FAN_SPEED	NC	FAN_PWR	FAN_PWR_R TN	PWM_FAN_ E
8	Pin removed	Pin removed	Pin removed	Pin removed	Pin removed
9	PEM_P1	I/O_1	SWR_R#	HLY_R#	SWR_L#
10	I/O_4	I/O_0	BD_SEL#	HLY_L#	HA7
11	AIR_FILT_PR	PEM_P2	I/O_2	I/O_3	PRES_1#

2.6.14.6 J2, Backplane Signal Connector

	a	b	c	d	e	f
1	FANP0#	TXD0	TXD1	FANP2#	INT#	GND
2	FANP1#	DTR	GND	CI	DSR	
3	CD	RTS	RXD1	HA[0]	CTS	GND
4	RXD0	CF_SDA0	INV_ACTIVE	SDA_SAP	GND	
5	CF_SCL0	SCL_SAP	GND	GND	FT_SDA	GND
6	S1_TX+	S1_TX-	GND	S2_TX+	S2_TX-	
7	S1_RX+	S1_RX-	GND	S2_RX+	S2_RX-	GND
8	PS_SDA0	PS_SCL0	FT_SCL	CF_SCL1	NC	
9	SCL_B15_R	SDA_B15_R	SCL_A15_R	SDA_A15_R	CF_SDA1	GND
10	SDA_B16_R	SCL_B16_R	SDA_A16_R	SCL_A16_R	I2C_PWR	
11	SDA_A3_R	SDA_B3_R	SCL_B3_R	SDA_B8_R	SCL_B8_R	GND
12	SCL_A3_R	SDA_A5_R	SCL_A5_R	SDA_A8_R	SCL_A8_R	
13	SDA_A1_R	SDA_B7_R	SCL_A1_R	SDA_A10_R	SCL_A10_R	GND
14	SCL_B7_R	SDA_A7_R	SCL_A7_R	SDA_A6_R	SCL_A6_R	
15	SDA_A9_R	SDA_B14_R	SCL_B14_R	SDA_B10_R	SCL_B10_R	GND
16	SCL_A9_R	SDA_A4_R	SCL_A4_R	SDA_B6_R	SCL_B6_R	
17	CROSS_SDA_B	SDA_B11_R	SCL_B11_R	SDA_B4_R	SCL_B4_R	GND
18	CROSS_SCL_B	SDA_A11_R	SCL_A11_R	SDA_A14_R	SCL_A14_R	
19	SDA_A13_R	SCL_A13_R	SCL_B12_R	SDA_B12_R	SDA_B9_R	GND
20	SDA_B1_R	SCL_B1_R	CROSS_SCL_A	CROSS_SDA_A	SCL_B9_R	
21	SDA_B13_R	SDA_B5_R	SCL_B5_R	SDA_B2_R	SCL_B2_R	GND
22	SCL_B13_R	SDA_A12_R	SCL_A12_R	SDA_A2_R	SCL_A2_R	

2.6.14.7 J1 and J2 pin description

.-48V_A	.-48VDC supply A
VRTN_A	Voltage return supply A
.-48V_B	.-48VDC supply B
VRTN_B	Voltage return supply B
SHELF_GND	Shelf Ground
FANTK[1..9]	Fan Tachometer Inputs
FAN_SPEED	DC Fan Speed Control (1.5V = min. speed, 10V = max speed)
FAN_PWR	Fan DC power rail, generated on fan trays
FAN_PWR_RTN	Fan DC power rail return path
PWM_FAN_C	Opto isolated PWM fan speed signal, collector
PWM_FAN_E	Opto isolated PWM fan speed signal, emitter
PEM_P[1..2]	PEM presence (3.3V = PEM is missing)
I/O_[0..4]	General purpose I/O pins for external signals
AIR_FILT_PR	Air filter presence (connected to switch to detect a missing air filter)
SWR_R#	Switchover signal from the other Shelf Manager
SWR_L#	Switchover signal to the other Shelf Manager
HLY_R#	Health of the other Shelf Manager
HLY_L#	Health of this Shelf Manager
BD_SEL#	Tells the Shelf Manager that it has been seated
PRES_1#	Board presence signal
HA7	Hardware address of Shelf Manager, bit 7
FANP#[0..2]	Fan Tray present (3.3V = fan tray is missing)
TXD[0..1]	Serial interface transmit data
RXD[0..1]	Serial interface receive data
DTR	Data Terminal Ready
RTS	Request To Send
CD	Carrier Detect
DSR	Data Set Ready
CTS	Clear To Send
INT#	External Interrupt request (Master Only I2C-bus)
CI	Shelf Intrusion signal
HA[0]	Hardware address of Shelf Manager, bit 0
INV_ACTIVE	This ShMM is in active mode (inverted signal of ShMM)
I2C_PWR	3.3V power for Shelf I2C-devices
GND	logical ground
S1_TX(+-)	Ethernet interface to either front panel or hub-slot base interface (jumper configurable)
S1_RX(+-)	Ethernet interface to either front panel or hub-slot base interface (jumper configurable)
S2_TX(+-)	Ethernet interface to other Shelf Manager
S2_RX(+-)	Ethernet interface to other Shelf Manager
CF_SCL[0..1]	Master-Only I2C-bus Channel 1 and 2 (to backplane SEEPROM)
CF_SDA[0..1]	Master-Only I2C-bus Channel 1 and 2 (to backplane SEEPROM)
FT_SCL	Master-Only I2C-bus Channel 3 (to fan trays)
FT_SDA	Master-Only I2C-bus Channel 3 (to fan trays)
PS_SCL0	Master-Only I2C-bus Channel 4 (to PEMs)
PS_SDA0	Master-Only I2C-bus Channel 4 (to PEMs)
SCL_SAP	Master Only-I2C-bus to SAP
SDA_SAP	Master Only-I2C-bus to SAP
SCL_A_14	Serial Clock, IPMB A Channel 14 (for bused IPMB or radial IPMB to logical slot x)
SDA_A_14	Serial Data, IPMB A Channel 14 (for bused IPMB or radial IPMB to logical slot x)
SCL_A_[1..13, 15..16]	Serial Clock, radial IPMB A (not used for bused IPMB)
SDA_A_[1..13, 15..16]	Serial Data, radial IPMB A (not used for bused IPMB)
SCL_B_14	Serial Clock, IPMB B channel 14 (for bused IPMB or radial IPMB to logical slot x)
SDA_B_14	Serial Data, IPMB B channel 14 (for bused IPMB or radial IPMB to logical slot x)
SCL_B_[1..13, 15..16]	Serial Clock, radial IPMB B (not used for bused IPMB)
SDA_B_[1..13, 15..16]	Serial Data, radial IPMB B (not used for bused IPMB)
CROSS_SCL_A	Serial Clock of IPMB A, cross-connected to serial clock of IPMB B of other Shelf Manager
CROSS_SDA_A	Serial Data of IPMB A, cross-connected to serial clock of IPMB B of other Shelf Manager
CROSS_SCL_B	Serial Clock of IPMB B, cross-connected to serial clock of IPMB A of other Shelf Manager
CROSS_SDA_B	Serial Data of IPMB B, cross-connected to serial clock of IPMB A of other Shelf Manager
NC	not connected

2.6.14.8 JP40-43, Shelf Manager Ethernet Jumpers

The **ShMM-ACB-III** can connect the primary Ethernet port, /dev/eth0, to either the CN6 front panel Ethernet connector or to the J2 backplane signal connector.

Jumper	Name	Settings	Description
JP40	TX0P	1-2	Connect TX0P signal from the ShMM (CN1) to Ethernet connector CN6
		2-3	Connect TX0P signal from the ShMM (CN1) to the Backplane signal connector (J2)
JP41	TX0N	1-2	Connect TX0N signal from the ShMM (CN1) to Ethernet connector CN6
		2-3	Connect TX0N signal from the ShMM (CN1) to the Backplane signal connector (J2)
JP42	RX0P	1-2	Connect RX0P signal from the ShMM (CN1) to Ethernet connector CN6
		2-3	Connect RX0P signal from the ShMM (CN1) to the Backplane signal connector (J2)
JP43	RX0N	1-2	Connect RX0N signal from the ShMM (CN1) to Ethernet connector CN6
		2-3	Connect RX0N signal from the ShMM (CN1) to the Backplane signal connector (J2)

Note :
Pin 1 of the all jumpers is the square pin.

2.6.14.9 Shelf Manager LEDs

The **ShMM-ACB-III** provides the following Front Panel LEDs:

Designation	Signal Name	Color	Description
D1	HS_LED	Blue	Hot Swap ready, from **ShMM-300**, pin 125
D2	LED_0A	Yellow	First Ethernet port is operating at 100 Mb, from **ShMM-300** pin 27
D3	LED_0B	Green	First Ethernet port has a link when lit and is active when blinking, from **ShMM-300** pin 29
D12	SWS_LED_R	Red	ShMM Status, from ShMM, pin 123
D12	SWS_LED_G	Green	ShMM Status, from ShMM, pin 124

3. Appendix

Contents

3.1 Getting Help

At Kontron, we take great pride in our customers' successes. We believe in providing full support at all stages of your product development.

If at any time you encounter difficulties with your application or with any of our products, or if you simply need guidance on system setups and capabilities, contact our Technical Support at:

CANADIAN HEADQUARTERS
Tel. (450) 437-5682
Fax: (450) 437-8053

If you have any questions about Kontron, our products, or services, visit our Web site at: www.kontron.com

You also can contact us by E-mail at: support@ca.kontron.com

Or at the following address:

Kontron Canada, Inc.
616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada

RETURNING DEFECTIVE MERCHANDISE

Before returning any merchandise please do one of the following if your product malfunctions:

- Call
    1. Call our **Technical Support** department in Canada at **(450) 437-5682**. Make sure you have the following on hand: **our Invoice #,** your **Purchase Order #,** and the **Serial Number** of the defective unit.

    2. Provide the serial number found on the back of the unit and explain the nature of your problem to a service technician.

    3. The technician will instruct you on the return procedure if the problem cannot be solved over the telephone.

    4. Make sure you receive an **RMA #** from **our Technical Support** before returning any merchandise.

- Fax
    1. Make a copy of the request form on the following page.

    2. Fill it out.

    3. Fax it to us at: (450) 437-0304

- E-mail
    1. Send us an e-mail at: RMA@ca.kontron.com. In the e-mail, you must include your name, your company name, your address, your city, your postal/zip code, your phone number, and your e-mail. You must also include the **serial number** of the defective product and **a description of the problem.**

When returning a unit.

i) In the box, you have to include the name and telephone number of a person whom we can contact for further explanations if necessary when returning goods. **Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.**

ii) Ensure that the unit is properly packed. Pack it in a rigid cardboard box.

iii) Clearly write or mark the RMA number on the outside of the package you are returning.

iv) Ship prepaid. We take care of insuring incoming units.

Kontron Canada Inc.
616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada

Return to Manufacturer Authorization Request

Contact Name:	_____		
Company Name:	_____		
Street Address:	_____		
City:	_____	Province/State:	_____
Country:	_____	Postal/Zip Code:	_____
Phone Number:	_____	Extension:	_____
Fax Number:	_____	E-Mail:	_____

Serial Number	Failure or Problem Description	P.O. # (if not under warranty)

Kontron Canada, Inc., 616 Curé Boivin, Boisbriand, Québec, Canada, J7G 2A7

Fax this form to Kontron's Technical Support department in Canada at (450) 437-0304